Telephony

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The Will-O'-the-Wisp of Standardized Telephone Rates

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THE FIRST of a series of articles on certain principles of the telephone business. Answers are given to many questions and arguments regarding theories concerning standardized telephone rates

NOTWITHSTANDING the American passion for standardization, no one has yet found a practicable way to standardize telephone exchange rates. That fact may appear to be of only academic interest to most Independent telephone companies. But there is an existing trend of telephone regulation that may, if it continues its present course, seriously affect owners and patrons of groups of Independent telephone exchanges under common ownership and in one regulatory jurisdiction. It would also, if carried to consistent finality, affect the patrons and owners of Independent exchanges under isolated ownership.

This trend of regulation is based primarily upon the theory that rates for telephone exchange service can be standardized. That this theory is "a delusion, a mockery and a snare" is demonstrable by the simple method of applying the facts to the case.

Some years ago a group of Independent telephone men undertook to gather and analyze data concerning telephone exchanges. One purpose of the undertaking was to see if it was really possible to arrive at what might be called standardized schedules of rates for exchanges of approximately the same size.

It is clear, of course, that if such standardized schedules could be devised and actually applied practically, the expenditure of considerable time could be saved by the elimination of many individual rate cases, with their attendant costs, worries and uncertainties.

Information regarding several thousand Independent telephone exchanges of different sizes was gathered and analyzed. This information covered existing rates, revenues, expenses, net earnings and so on. Based on a study of all this data, standardized schedules of rates for exchanges of various sizes were worked out.

These schedules, according to the theory of averages, should have been practical when applied to exchanges of the sizes for which they were designed. When, however, the schedules were tested by applying them to a number of exchanges individually, this situation was found:

As to a certain number of exchanges (the number varying in each class of exchanges studied), the standardized rates would apparently have been fair both to patrons and to the owners of the property. But, as to the remainder, the schedule would in some cases have produced net earnings considerably higher than reasonable; while in the other exchanges, entirely comparable as to size, the very same rates would have resulted in net earnings so low that in some cases the effect would have been confiscation of property.

Upon analysis it was finally concluded that standardized schedules of telephone rates are not practicable. The reason: Any standardized schedule must be based upon averages, and, correctly speaking, there is no such thing as an average telephone exchange.

Some Questions Concerning Telephone Plants

In pre-depression days, when promoters, investment bankers and others besieged telephone men for information about the industry, one of the questions most frequently asked was: "What is the investment cost per station of the average telephone plant?"

There is no intelligent answer to that question. Before even attempting to answer it, the telephone man himself must ask a series of questions. First: A telephone plant of what size—big city, small city, town or rural? Size determined, then: What kind of telephone plant—manual or automatic? Or, if a small plant—magneto, common battery or automatic? What kind of construction—principally underground, aerial cable or open wire? Copper or iron wire? Cedar poles or native—and set in soil or in rock?

What is the shape of the area covered? Is it long and narrow, square or otherwise, since that determines to some extent the amount of plant necessary to serve the

area? Is the town compact or straggling? If rural, are the farms large or small? And where is the plant in question—in the North, South, East or West? Construction costs, and even construction methods, vary in different sections of the country.

These are only a few of the questions, but they point the fact that dealing with averages is impractical in calculating investment costs in telephone exchanges, even when such averages are applied to towns or exchanges of approximately the same size.

Why Operating Costs of Exchanges Differ

The same comment applies to operating costs. If you should tear down all telephone plants existing in this country today and replace them with new plants exactly alike in all cities or towns of comparable size, some of these standardized plants would still cost more to operate than others of practically identical size.

Nor should it be concluded that the size of a town is of itself a certain indication of the number of telephones there. Ask a telephone man how many stations he would estimate to be in service in a town of given size, and he will probably ask you, "Where is the town?" He knows there is as much variation in the telephone development in different towns as there is variation in plants in different towns.

The reason for this is readily apparent to those who really know this country. Telephone development depends largely upon the kind of people—not merely the number of people—in a town. A city of, say, 20,000 people in certain sections of the South is not to be compared telephonically, for instance, with one of like size in certain other parts of the country—the population of the southern city may be 40 per cent negro.

The population of "mill towns" in industrial sections of the East and South may be 60 per cent or 70 per cent of the laboring class with but one telephone or less to the 100 people. It is no more practicable to take population as a basis of rates than it is to take the number of stations for that purpose.

The questions naturally arise: Why is it necessary or advisable that telephone plants be different, and why, even if they are different, should operating costs be appreciably higher—or lower—in one town than in another town of the same size?

It is readily apparent, of course, that there can be no useful comparison, either of investment or of operating costs, for plants of greatly different sizes. There is about as much similarity, for instance, between the big-city telephone plant and that of the average country town as there is between a sky-scraper and a bungalow.

As to plants of approximately the same size, the differences arise not only from the character of the population to be served, but also from climatic and other conditions the plant is expected to meet. The telephone plant, like the style of buildings and even that of the clothing worn by the inhabitants of a particular part of the country, is usually designed to fit the customs and conditions of its locality.

In the sleet belt of the Middle West the telephone man who is wise —and who can afford it—sets heavy poles and guys them well. Yet, on the vast dry plains of the Southwest, good rural telephone service can be, and frequently is, furnished by local companies over wires strung along the tops of the posts of ranch fences.

The telephone man who must blast the holes for his poles out of rock, with much labor and expense, faces a situation considerably different from that of his brother who must disturb only sandy soil in order to set his poles.

The telephone plant in some sections must be built to withstand cyclonic winds; in some, to stand up against devastating flood; in others, the right of way must be cut and be kept clear through heavy forests. The exchange building that will afford comfortable working quarters in some sections of the South might be uninhabitable in the North in winter. Differences in the type and character of telephone exchange construction are many. This is a big country; nothing so local in character as a telephone exchange is ever fully standardized.

Cost of Producing Service

The cost of producing service is a factor as variable as that of the property value.

Wages, not only actual but also from the standpoint of efficiency, vary considerably in different sections of the country. Climate plays an important part in costs, naturally. It has a major bearing on maintenance expense and determines to a considerable extent the amount necessary to be reserved, as depreciation, against deterioration.

The type of central office and subscribers' station equipment, whether magneto, common battery or automatic; the age, condition and modernity of the plant, both inside and out; compactness of the plant and of the area served, transportation costs of supplies, taxes, collection costs—all these and a multitude of other items, never all the same in any two plants or any two localities, determine not only the costs themselves, but also the difference of costs between exchanges.

Admittedly, management is a factor in the cost of producing telephone service anywhere. This is true whether the plant is locally owned or one of a group, and whether the group is large or small. Most of the cost of management is local in either case. You cannot standardize brains, ability or efficiency; in this respect the telephone business does not differ from other businesses.

So, when you come to the proposition of standardizing telephone exchange rates—which you can do only by basing such rates on averages—you will find that any standardized schedule that can be made will unduly enrich some exchanges at the expense of the patrons served, while impoverishing other exchanges, sometimes to the point of confiscation.

Only Application of Standardized Exchange Rates

It is true that averages are reasonably applicable in many affairs. Insurance companies, for instance, can average with almost uncanny accuracy the life expectancy of, say, 100,000 men. But no insurance company would undertake to say how long any one of those men will live.

The average will be correct for the 100,000 but the fellow who dies before the end of his expectancy is just as dead as if it had been wrong. The local telephone company, driven into bankruptcy by a standardized rate, would derive little consolation from the fact that another exchange somewhere else was thriving mightily under it.

The only application or proposed application up to date of standardized exchange rates occurs in some of the so-called "state-wide" or "company-wide" rate cases which have been or are being carried on in a number of states.

Not all of these cases—which, incidentally, are misnamed, since none of them are really state-wide and some of them are not even company-wide—go so far as to really attempt to establish actual standardized rates; most of them are nothing more than an undertaking to value

at one time all the property of one company, and to "work over" all the rate schedules of that company in one case.

In a few states, however, commissions have apparently espoused fully the theory and principles of standardized exchange rates. In these cases the attempt is to apply a more or less standardized rate schedule to all the exchanges of approximately the same size operated by one telephone company in one regulatory jurisdiction.

The theory is that if the aggregate earnings of the company are compensatory to the company as a whole, it is immaterial whether the earnings of an individual exchange are more or less than compensatory.

It is assumed that there is a general community of interest between the patrons of all the exchanges owned by one company in one state, and that this community of interest is sufficiently valuable to all the patrons of that company to justify a standard level of rates in all exchanges of approximately the same size operated by that particular company in that state, even though such rates are higher or lower than they would otherwise be for the individual exchanges.

Arguments for Standardized Rates

That is to say, it is considered both legal and equitable to charge the subscriber at one exchange more than he would otherwise pay, in order that service may be rendered to a subscriber at another exchange owned by the same company—and perhaps some distance away—at a rate lower than he would otherwise pay.

It is argued that the savings accomplished by fixing exchange rates on a wholesale basis allow a lower general level of telephone rates, thus benefiting all subscribers of the system. This argument is debatable; rate costs are, on the whole, a small percentage of the cost of producing service.

It is argued that a standardized rate will allow the company to develop otherwise unprofitable areas. An answer to this is that the company develops them anyway.

It is argued that fixing rates on a company-wide basis eliminates the perplexities of allocating between exchanges the general expenses of the company. This is true but, after all, the job of allocating these costs is not of such importance that the entire system of rate-making need be changed on account of it.

When all the collateral arguments are considered, the principal justification for standardized exchange rates is the general community of interest between different localities. Just how far this reason would stand up with most telephone subscribers is something to wonder about.

Community of Interest Factor

Of course, the various classifications of rates within an individual exchange are, and have always been, more or less on a "give and take" basis. There is usually no practical way to make every single class of service within an exchange fully compensatory. The merchant pays more, the householder less, the farmer still less.

Aside from the actual difference in the service—such as private line, party line and so on—rates within an exchange vary on theories of amount of use, and even of value of the service to the user. But this is all within the individual exchange area, where actual and local community of interest is the fundamental basis of value of telephone service, and is, in fact, the fundamental reason for the existence of a telephone exchange.

But when you attempt to spread this actually existing local community of interest out over a whole state, or even part of a state, it becomes pretty thin. It can be safely said that the telephone subscriber who would willingly pay more for his own telephone service in order that some unknown user in some other town might pay less, would be a very rare bird indeed!

The trouble with the theory of company-wide standardized exchange rates is that it either goes too far, or it does not go far enough.

If the theory that there is tangible value in wide-spread community of interest is unsound, the proposition goes too far when it exists at all, because the minute one subscriber, anywhere, is required to pay something extra to allow another subscriber in some other locality to pay less, injustice is done.

Where Standardized Rates Might Lead

If, on the other hand, there does exist a wide-spread community of interest between different communities and that interest is of sufficient value to justify charging some people something for it, then certainly the "happenstance" of ownership by one telephone company or another of the exchanges in those communities has nothing to do with it. Certainly, also, state boundaries have little to do with it.

If the idea is right, it certainly should not be confined to so-called "state-wide" or "company-wide" situtaions, because state commission jurisdictions and ownership of telephone properties are not the logical limits to it. It should be nation-wide. Therefore, the idea is essentially monopolistic, because it would not be commercially practicable—even assuming the telephone subscribers who had to foot the bill could be placated—unless one telephone company owned all the telephone exchanges in the country.

If one telephone company owned all the telephone exchanges in the country, doubtless that company could sit down with a commission—or with all the state commissions—and together they could work out standardized rate schedules, based on averages, applicable to all the telephone exchanges according to size, and which would be compensatory in the aggregate to the telephone company.

What the company lost through inadequate rates at many places, it would recoup through rates higher than necessary at many other places. Then all the telephone company and the commissions would have to do would be to convince a large number of telephone subscribers that they should pay a rate higher than necessary, in order that subscribers elsewhere could obtain service for rates lower than necessary.

And then—if a telephone man may be allowed an opinion on the subject—they would find that all their troubles up to that time had been merely a summer zephyr, compared to the hurricane that would ensue.

There is a lot of fine thinking about the telephone business going to waste in this country because it is based on a wrong conception of the business. There seems to be a theory that because local telephone exchanges are connected by long distance wires, then, no matter how far apart they may be, there is a great mutual interest between them.

What Subscriber Is Interested In

The real fact is that subscriber John Smith at Shady Palms, Calif., for instance, is about as much interested in the kind, quality and cost of telephone service rendered in Skowhegan, Maine—or even in his own neighboring towns in California—as he is in the number of fish in the Gulf of Mexico!

What John Smith is principally interested in telephonically is the kind, cost and quality of telephone service in his own home town. He wants that service to be modern and the quality good, and he objects to

being gouged by excessive prices for it. He expects the telephone company and his commission to take care of him in all those things.

It is granted that the splendid system of long distance telephone facilities in this country—which has no equal in any other country—is a valuable, necessary and integral part of the telephone system of the country as a whole.

But subscriber John Smith looks upon it as a facility to be used or not, as his needs and desires require, and not as a part of his local telephone exchange. His local telephone is, on the other hand, an essential part of his every-day life. It is valuable and necessary to him whether or not all other cities and towns of the country are likewise provided with similar telephone facilities.

Each Telephone Exchange a Local Institution

A true conception of the telephone situation can be had only by looking upon each telephone exchange, no matter by whom it is owned, as a local institution.

The investment in it, the cost of operating it, and the rates that must be obtained in order to realize a fair return from it, bear no more relation to other telephone exchanges of similar size than the relation between the cost of living in towns of the same size in different parts of the country, with varying conditions.

The cost of living in towns of a given size throughout the country can, of course, be reduced to averages; just the same, one might live in comparative luxury in one part of the country for an expenditure that would confine one almost to bare necessities in another part.

The only real reason for standardization of telephone rates would be to benefit, in some way, the telephone subscribers. The real effect upon telephone subscribers would be to benefit only a part of them—and that at the expense of the remainder. The proposition is not compatible with either the law or the equity of rate-making as those things exist today.

The Operators' Corner

By MRS. MAYME WORKMAN
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TRAFFIC RULES keep our "Highways of Speech" free from congestion. What to do when two operators meet on a circuit? Toll circuit courtesies. Series No. 186

IN SOME RESPECTS, working out on a toll circuit is similar to driving an automobile. We must have motor vehicle laws to regulate automobile traffic, to keep it moving along steadily and safely without delay, and certain rules must be followed to avoid accidents. In some cases the driver of one motor vehicle must give the right-of-way to another.

So it is with the use of our toll circuits. We must have rules to keep our toll traffic moving along smoothly, without interference.

If drivers of motor vehicles are courteous and observe the rules, traffic will move along without congestion. If, however, this practice is not followed the result is lost tempers, a tirade of harsh words, and in some instances, injury or loss of life.

If operators fail to observe their traffic rules when they meet on the "Highways of Speech," if they are impatient or discourteous, we too will find frayed nerves and lost tempers, and a loss of valuable circuit time, particularly when operators argue and are reluctant to give up a circuit even though another operator has a right to the use of the circuit because her call takes precedence.

When two operators meet on a circuit, if one operator has passed a call, report, or order and has received acknowledgment (not including transfers to TX or RX), she should say: "I have passed a call (or 'report' or 'order')." The other operator should say, "Right," and permit her to use the circuit. She has reached her destination.

If an operator's call, report or order has not been acknowledged or if she has not passed one, she should challenge by saying "Holding," if the calling party is holding the line, or, "My time is (time)," if the calling party is not holding the line.

However, if you have a WH report to pass, or if you require the circuit for the completion of an appointment call, or if you require the circuit after the start of conversation for the re-establishment of a connection on which a cut-off has occurred or for a better connection, regardless of whether or not the calling party is holding the line, say, for example, "My WH is (time)." If the other operator says "Right," at once pass your call, report, or order.

If an operator has built up a circuit to the desired office but has not passed and disposed of the call, report, or order for which it was built up, she should not give up the circuit for a call, report, or order to a toll center other than her own. If the operator at the desired office has a call, report, or order for your office which takes precedence, it shall be handled first. After it is disposed of, you have a right to the circuit before it may be used for a call to another toll center.

If you meet another operator on a circuit at a time when you are both holding your customers on the line, the one who first says "Holding," has precedence.

If we follow these instructions, our "Highways of Speech" will be kept clear of congestion insofar as possible, our dispositions will not be ruined, and we will have the peace and satisfaction which is the result of fair play.

Questions from Illinois Operators

1. A collect ticket to a pay station has been passed to the TTC. The called party is reported "FC" a number to which an IN ticket is not required. Which ticket is completed for billing, the originating OUT or the IN ticket already prepared?
2. What is meant by "Speed of Service"?
3. On a call sent collect and a report is given, how many days can we hold this ticket?
4. Should a tributary operator ring back to clear the circuit on TC calls?
5. Who gets the circuit, the operator with filing of holding or built-up circuit operator?

For the answers to these traffic questions, please turn to page 27.

Telephone and Telegraph Hearings Before the FCC

Hearing on Interpretation of FCC Jurisdiction

According to telegraphic advices received by TELEPHONY, oral arguments were presented on Monday, March 25, before the telephone division of the Federal Communications Commission in Washington, D. C., on the interpretation of section 2-b-2 of the Communications Act of 1934, which relates to jurisdiction of the commission. This section reads:

Sec. 2 . . . (b) Subject to the provisions of section 301, nothing in this act shall be construed to apply or to give the commission jurisdiction with respect to . . . (2) any carrier engaged in interstate or foreign communication solely through physical connection with the facilities of another carrier not directly or indirectly controlling or controlled by, or under direct or indirect common control with, such carrier; except that sections 201 to 205, both inclusive, shall, except as otherwise provided therein, apply to carriers described in clause (2).

Briefs were filed by March 20 by the National Association of Railroad & Utility Commissioners, Wisconsin Public Service Commission, United States Independent Telephone Association, Rochester (N. Y.) Telephone Corp., Lincoln (Neb.) Telephone & Telegraph Co., Lorain (Ohio) Telephone Co., Ohio Standard Telephone Co. of Jackson, Ohio, Eastern Indiana Telephone Co. of Winchester, Ind., Missouri Telephone Co. of Columbia, Mo., and the Oklahoma-Arkansas Telephone Co. of Poteau, Okla.

In opening the hearing, Chairman Paul A. Walker, of the telephone division, read the list of those filing briefs and expressed the hope that the one day would conclude the hearing.

John E. Benton, counsel of the National Association of Railroad & Utility Commissioners, reviewed the attitude of the various state commissions regarding exemption from jurisdiction of the FCC of Independent companies whose interstate business is solely through physical connection.

Arguing the interpretation relative to controlling interest in companies, Mr. Benton took the same position as did the United States Independent Telephone Association in its brief. That is, that the question of control is a question of fact and must be determined by the conditions of management of each particular case.

There are certain general principles which cannot be disregarded. Control is exercised by the stockholders who own the majority of the stock and the FCC must approach the question from a point of view of majority and not from the point of view of the minority stockholders.

Attorney Alvin C. Reis, on behalf of the Wisconsin Public Service Commission, argued that only the Wisconsin Telephone Co. controls interstate business. By controlling the toll rates of the Wisconsin Bell company, the FCC will control the Independent toll rates.

Alfred L. Geiger, attorney for the United States Independent Telephone Association, gave the best interpretation of the section 2-b-2. He argued that the only companies subject to the full jurisdiction of the FCC are those furnishing the facilities at the point of origin, the toll lines, and the facilities at the point of reception. Connecting carriers, he contended, are subject only to sections 201 to 205, inclusive, of the Communications Act.

T. Carl Nixon, representing the United States Independent Telephone Association and the Rochester (N. Y.) Telephone Corp., contended that an interpretation of controlling interest would be a leading aid to reducing the work of the FCC.

Judge E. O. Sykes asked if proxies constitute indirect control.

Attorney Nixon, in reply, said no; they are too flimsy; that 52 per cent of the stock must be owned.

Commissioner Norman S. Case called attention to the fact that only 19 out of 1,038 companies examined so far have been judged under full FCC jurisdiction.

John H. Agee, of Lincoln, Neb., admitted the Lincoln Telephone & Telegraph Co. comes under FCC jurisdiction, excepting 2-b-2, but was objecting on two grounds—expense and serving two masters. If the FCC should alter Bell toll rates, Independent companies would abide by those rates for intrastate business, he said.

Francis Dunbar, of Columbus, Ohio, counsel for the Lorain (Ohio) Telephone Co., the Champaign Telephone Co., Urbana, Ohio, and the Ohio Standard Telephone Co., Jackson, Ohio, claimed it essential to classify Independent companies with respect to the Communications Act of 1934, and named four classifications. He also reinforced the argument of Attorney Nixon as to the importance of interpretation of control.

Although the Eastern Indiana Telephone Co., Winchester, Ind., and the Citizens Telephone Co. filed briefs, no arguments were presented in their behalf.

L. E. Durham, on behalf of the Missouri Telephone Co., Columbia, Mo., argued that telephone facilities across state lines do not, in themselves, constitute interstate communication; there must be traffic.

Questioned by Judge Frank Roberson, of the FCC, concerning the interstate toll line of the Home Telephone & Telegraph Co., Fort Wayne, Ind., from Ohio through Indiana into Michigan, Mr. Durham replied that there were three connecting carriers concerned.

The last oral argument heard was made by James B. McDonough, of Fort Smith, Ark., attorney for the Oklahoma-Arkansas Telephone Co., Poteau, Okla. He reviewed the quarrel of the Oklahoma-Arkansas company with the Southwestern Bell Telephone Co., relative to commissions on tolls and the cancellation of the contract whereby the Southwestern Bell ceased to route toll calls from Fort Smith, Ark., to Poteau, Okla., over a toll line of the Oklahoma-Arkansas company on the Southwestern Bell poles. He urged that the FCC intercede in the matter. Upon the conclusion of his argument, the hearing was closed.

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FCC Hearing on Telegraph Rates and Practices

On March 15 a study of the rate structure connected with the operations of press wires, leased wires and teletype wire services which supply newspapers with dispatches was begun by the telegraph division of the Federal Communications Commision. The hearing was continued on March 18 to March 25 when, it was announced, leased wire service would be taken up.

There was no move toward increased rates, it was declared, and Chairman Stewart, who presided at the hearings in Washington, D. C., said that "we just want to know for our own information how this thing works." The hearings were ordered, he said, merely to present to members of the commission a picture of the methods employed in the distribution of press messages and the charges made for such service.

Western Union and Postal Telegraph officials differed slightly in describing the agencies which, in their opinions,

qualified for the privilege of press rates. J. C. Willever, vice-president of Western Union, said that his company extended the privilege to newspapers published at least once a week, and to radio broadcasting stations. T. M. Powers, in charge of general traffic for Postal, said his company also would grant press rate privileges to motion picture companies when the matter was for the "general public."

Ralph S. Fowler, of counsel for the American Newspaper Publishers Association, representing 80 per cent of the daily newspapers of the country, stated that his organization was only interested in continuing efficient service at the lowest cost.

Charges of monopoly in the press field brought denials at the hearing on March 18. Meanwhile a comparatively new agency brought out that it would urge a change in "definitions" so that it might obtain increased business.

After Colonel A. H. Griswold, vice-president of Postal Telegraph & Cable Co., had expressed opposition to "exclusive contracts" on the ground that they "bottled up" news sources, J. C. Willever, vice-president of Western Union, which holds several such contracts in the financial markets of New York City and at baseball parks and hotels, returned to the stand.

Colonel Griswold had testified that news dispatches, particularly financial news and other "headline" events, created wider use of commercial telegraph facilities.

Mr. Willever contested the statement, denying that news stories of any nature caused increased commercial business, or that exclusive contracts bottled up news sources.

Views to the contrary were presented by F. E. Meinholtz, chief of communications for the New York Times and secretary of Press Wireless, Inc., who declared that unusual news events resulted in a rush of private telegrams. He cited the Florida hurricane, stories of sharp breaks on the Stock Exchange, and news about public officials. He estimated that the Florida disaster several years ago impelled a rush of 100,000 telegrams.

Joseph Pierson, president of Press Wireless, Inc., the news distributing agency which he said was the "gold fish" of the industry "because we have no venerable and mysterious history to disclose," suggested changing the definition of press matter so that his company could expand and sell news which it is now prevented from handling.

He said that seven of the country's largest newspapers were stockholders in the company. Last year 17,000,000 words were transmitted by radio to these papers and other clients. Mr. Pierson contended that by changing some definitions of news, Press Wireless could expand and send out much information now prohibited.

Mr. Meinholtz said that the New York Times usually received daily, of all matter, from 350,000 to 450,000 words, and sometimes as high as 500,000. That was equal to about 4½ per cent, he said, of all press matter handled by the Western Union.

He predicted the eventual use of teletypewriter sending machines, for the reason that they could be operated cheaper than the cost to publishers of night press messages. Any effort to increase rates, therefore would defeat its own purpose, he declared.

On Monday, March 25, testimony revealed that American press associations are the largest individual users of private line telegraph service.

Testifying before a crowded hearing room, C. F. Craig, general manager of the long lines department of the American Telephone & Telegraph Co., said that the United Press, the Associated Press, the International News Service and similar organizations distribute news to about 1,200 newspapers in 800 cities, with a combined daily circulation of more than 35,000,000.

"These papers have a news requirement ranging from 15,000 words to well over 100,000 words per day," he continued. "More than 300,000 miles of telegraph circuits are used in operation of press private-line telegraph services."

Mr. Craig explained in detail the operation of the private wires and said that the A. T. & T. Co. by the end of 1929 had 1,100,000 miles of circuits devoted to them, with some 1,500 customers, including the United States government, commodity and stock markets, brokers, and general business concerns.

He denied that the growth of this communications service had interfered with telegraph business.

Exception to this statement was voiced by Howard L. Kern, counsel for the Postal, and later J. C. Willever, vice-president of the Western Union, charged misuse of the leased wire principle. He said, however, that his company was interested only in correcting what it viewed as unfair competition by the telephone company.

One factor that permitted the telephone company to take over the leased wire business, he said, was inadequacy of rates.

"That company, having no interest in mesage service to protect, and concerned solely to develop the market for its large reservoir of surplus facilities," he continued, "not only pre-empted the natural and proper leased-wire field but, in total disregard for the effect upon the business of the telegraph companies, it set about to create additional markets through the advocacy of joint leases."

Prospective customers who represented that their needs did not warrant a leased wire, were urged to join with others in a lease and thereby reduce the cost to what they could stand, he said, and telephone company representatives undertook to find correspondents for such joint leases.

He declared that if telegraph companies were to continue to render a comprehensive and satisfactory telegraph service, they should "be protected from the undue dilution of their traffic, which can only be done through the adoption of adequate restrictions against misuse of the leased wire principle."

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FCC Authorizes Construction of Interstate Cable

The telephone division of the Federal Communications Commission on March 22 granted the application of the Diamond State Telephone Co., the Chesapeak & Potomac Telephone Co. of Baltimore City, and the American Telephone & Telegraph Co., filed March 11, 1935, for authority to supplement existing facilities between Dover, Del., and Salisbury, Md., as follows:

1. To construct a cable line, including the necessary poles, fixtures, etc., from a point in the city of Dover, Del., to a point in the city of Salisbury, Md.

2. The cable is to contain quads of conductors as follows: (a) Dover to Seaford, Del. (37 miles)—45 quads; (b) Seaford to Delaware-Maryland state line (Delmar) (13 miles)—37 quads; (c) Delaware-Maryland state line (Delmar to Delmar Branch line (2 miles)—27 quads; and (d) Delmar Branch line to Salisbury, Md. (5 miles)—37 quads.

3. The companies shall keep complete cost records of the manufacture and installation of the line in such a way as to make possible the complete and proper allocation of costs to the several companies.

4. The companies shall keep the commission advised as to the progress and time of final completion of the project.

5. Within 60 days after completion of the construction the companies shall file a final report with the commission showing the detailed cost of construction and the allocations of costs among the interested companies.

6. The granting of the application shall not be deemed in any wise to be an approval of the proposed method of determining manufacturing or construction costs of the various items of plant, nor of the proposed methods of entries in the fixed capital and depreciation reserve accounts either as to amounts or as to division between companies.

7. Nor shall the granting of this application be construed as an approval of the amount of the investment therein.

The Telephone and Fire Insurance Rates

THE GREAT PROTECTIVE value of the telephone is so apparent and so commonly known that sometimes even telephone men themselves fail to give it—or to obtain for it—proper recognition.

Every one knows, for instance, that a very high percentage of fire alarms are turned in by telephone. It is only natural that, in case of fire, accident, sudden illness or other emergency demanding prompt action, the telephone should be resorted to when available, as the quickest and most certain way of obtaining immediate help.

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FIRE INSURANCE companies should recognize that the telephone is, especially in isolated places, their greatest aid against loss. The use of the telephone to promptly summon help in fighting fire saves the insurance companies millions of dollars a year in losses they would otherwise pay. To realize this, one needs to read only a few of the thousands of newspaper stories a year concerning fires. We quote a few of them:

"The ——— fire department answered a telephone appeal for help and promptly extinguished the flames. The damage might have been serious." "Prompt work on the part of the telephone operators notified the members of the fire department; the building was saved." "'Get help! My house is on fire!' were the excited words that came to a telephone operator from a farmer near ———. In the space of minutes his neighbors were on hand, and saved the home."

"On Friday evening three fires broke out at farm homes near ———. The fire calls came to the telephone office simultaneously. The operator worked swiftly to notify all neighbors . . . the flames were all extinguished before much damage was done."

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ON THE OTHER side of the picture are: "There was some delay in turning in the alarm, due to the fact that there was no telephone in that locality. The building was destroyed." "No telephone . . . was too great a handicap in favor of the fire which completely destroyed the homestead house at ———." "There was no telephone at the house, nor at the neighbors, who had to go two miles to turn in the alarm. . . . Only some personal belongings were saved from the blaze." So the records run.

Such records of the value of the telephone in case of fire—and especially in the case of farm fires—could be continued almost indefinitely. The difference between a home lost or saved, or between large and only minor fire damages, depends in many of these rural cases upon whether or not there was a telephone installed and in operation on the farm.

FIRE INSURANCE companies give credits on premium rates for many items of much less protective value than the telephone. The type of chimneys; the existence and location of fire extinguishers; the kind of roofing—all these and other items of the character reduce the insurance rate. The telephone probably saves the insurance companies more money in the long run than any of them.

The possession of a telephone—especially on the farm—should reduce fire insurance rates upon the buildings so protected! This fact has been called to the attention of various insurance companies by a number of telephone men during the past several years.

Louis Pitcher, of the Dixon Home Telephone Co., Dixon, Ill., qualifies practically as an expert on the subject, and has written articles and made talks on it. J. G. Crane, representing Missouri Telephone Co. and other companies, has been studying and pushing the matter for years. President F. B. MacKinnon and Secretary Chas. C. Deering and other officers and directors of the United States Independent Telephone Association, have worked on it. A number of other telephone men have been giving the proposition attention.

Through Mr. Crane's efforts, R. B. Jones & Sons, of Kansas City, general agents for a number of insurance companies, have become interested in the subject, and C. C. Jones of that firm has been active in putting it before the insurance companies.

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A NUMBER OF insurance agents, writing fire insurance on farm buildings, have been interested in the proposition through the efforts of telephone men. Many local agents are, it is said, ready to present the situation to the insurance companies they represent.

Even a small reduction in the fire insurance rate for the farm equipped with a telephone would be of great help, not only to the telephone companies trying in every possible way to encourage the installation of rural telephones, but also to the farmer. It would bring home to him and to the public generally, as nothing else could do, the practical value of the telephone as a safety and protective device.

It would, by encouraging the farmer to install or to keep a telephone, save many thousands of dollars yearly in fire losses on the farm—and the insurance companies would be the greatest monetary beneficiaries.

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THIS PROPOSITION is very valuable to the telephone industry, and should be pushed in an active and especially a concerted way. The valuable work that has been done to date on it by the many tele-

(*Please turn to page* 46.)

Alternating Current Theory

By ARTHUR L. ALBERT
Associate Professor of Communication Engineering, Oregon State College

EIGHTH ARTICLE in series of electric fundamentals for the telephone worker. Alternating current voltage and relations of voltage and currents. Current flow in resistance, inductance, and capacity. Effective resistance and power in alternating current circuits

WHEN the flow of direct current was studied (TELEPHONY of January 5), it was explained that the current consisted of a flow of electrons through the wire from the negative to the positive terminal. The electrons are forced through the wire by the applied voltage, and as long as this voltage is in one direction, the electrons flow in that direction.

In an alternating-current circuit, however, the voltage is rapidly changing in polarity; hence the direction of the electron current flow also rapidly changes. The electrons first flow in one direction and then in the other as the voltage changes. Thus, in alternating-current circuits, the electrons do not necessarily flow entirely *around* the closed circuit as they may do in direct-current circuits.

Alternating-Current Voltages: In introducing alternating-current theory, the voltage will be considered first, because it is the voltage which causes a current to flow. Alternating voltages are produced in many ways. One illustration of its production is the *hand generator* or *magneto* used in ringing on local-battery telephone lines. A simplified sketch of this generator is shown in Fig. 1.

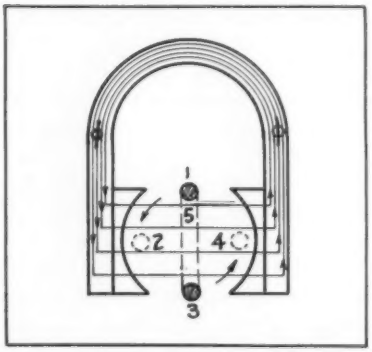


Fig. 1. Simplified Sketch of Magneto Telephone Generator Showing Direction of Flow of Lines of Force.

The large horseshoe magnets provide the magnetic field shown by the light lines of force, ϕ. These lines pass across the air-gap between the poles, as shown. Within this air-gap the armature windings in which the voltage is induced are turned by the hand crank (not illustrated). For simplicity, the armature windings are shown bunched into a compact coil of wire. The *ends only*, showing the cross-section of the coil, are illustrated. The coil is assumed to rotate as indicated by the arrows.

As the coil rotates, a voltage is induced in the armature conductors, because, from Lenz's law, *whenever a change is made in the flux linking a circuit, a voltage is induced which tends to oppose that change*. But, the magnitude of this induced voltage will not always be the same.

This is true because the *rate of change* of flux linkages is not the same. Thus, when the armature conductors are moving through the position 1 shown in Fig. 1, the *rate of change* of linkages is zero, since the bunched conductors—that is, the wires shown in cross-section—are moving *along* the lines of force and not *across* them. If the rate of change of flux linkages is zero, the induced voltage is also zero, and this is true for position 1 of Fig. 1.

For simplicity, only *one* set of conductors (the top ones) will be considered. As mentioned, when these pass through position 1, the voltage is zero; this is indicated at point 1 on Fig. 2. Now, as the conductors pass through position 2 of Fig. 1, they are cutting the maximum amount of flux, and the *rate of change* of flux linkages is greatest. The corresponding voltage is at point 2 of Fig. 2.

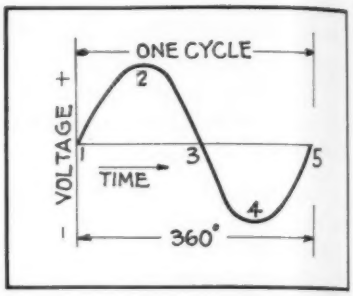


Fig. 2. Variation of Induced Voltage With Changes in the Flux Linking a Circuit of the Generator Armature Conductors.

When passing through position 3, however, the conductors are again just "sliding along" the lines of force as in position 1, and hence the voltage induced is again zero as shown by point 3 of Fig. 2. When passing through position 4, the induced voltage is again maximum as for position 2, but this voltage is in the *opposite* direction, because the lines of force are now being cut in the opposite direction.

If the voltage passing through position 2 is considered as a positive maximum, then that of position 4 is a negative maximum. Of course, voltage is also being induced in the other set of armature conductors, but the connections are so made that this merely adds to that induced in the upper set (position 1).

Passing through one complete rotation or 360° produces *one cycle* as indicated in Fig. 2. It should be noted that this was for a two-pole machine. Other generators are used, especially for producing considerable amounts of electrical power, which have more than one pair of poles, and hence more than one cycle is generated during each revolution. Similarly, in commercial power generators, the armature windings are not bunched, but are distributed.

The theory given here holds quite closely, however, for a hand generator or magneto. The induced voltage in such a machine would probably not be so regular as Fig. 2 indicates, but could be made so if desired by proper design.

Although Fig. 2 was drawn to show the shape of an alternating current

voltage, it also represents the current that such a voltage forces through a circuit in which no distortion is produced. These are spoken of as voltage and current *sine waves* or merely as waves. The term "sine wave" comes from the mathematical expression for these impulses.

Phase Relations of Currents and Voltages: Throughout all the preceding articles the fact has been stressed that the voltage *forces* the current through a circuit. The conclusion is reached, therefore, that the current must exist at the same time the voltage exists. This is in general true, but in alternating-current circuits a curious effect occurs: The current may *lead* or *lag* the voltage by any angle from zero to 90 degrees.

Thus, in Fig. 3-A are shown the current and voltage in phase. That is, the angle of lead or lag is zero. In Fig. 3-B, the current, I, lags the voltage, E, by 90°. That is, I passes through corresponding points 90° *after* E. In Fig. 3-C, the current, I, *leads* the voltage, E, by 90°. That is, I passes through corresponding points 90° *before* E.

It is not always convenient to draw out sine waves as in Fig. 3 to show current and voltage relations. The same results can be achieved by merely drawing vectors, as shown by the arrows below the sine waves. Vector diagrams for electrical quantities are assumed to rotate counterclockwise, although this rotation may not always be shown on a diagram. Thus, the vectors of Fig. 3-A rotate together and are in phase; the current vector of Fig. 3-B is 90° behind the voltage vector, and the current vector of Fig. 3-C is 90° ahead of the voltage vector.

Alternating-Current Flow in Resistance: If an alternating-current voltage is impressed on a circuit consisting of resistance only, the current which flows will be

$$I = E/R \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

where I is the *effective* value of the current in *amperes* when E is the *effective* value of the voltage in *volts*, and R is the *effective resistance* in ohms.

The voltage and resultant current waves are shown in Fig. 3-A. Note in particular that the current and voltage are *in phase;* that is, they pass through maximum and minimum values at the same instants. The fact that the voltage wave, E, is larger than the current wave, I, has no particular significance; they are merely plotted to separate scales since they are in different units.

The terms "effective value of voltage" and "effective value of current" were used in the preceding paragraph, and this usage will now be explained. Alternating-current sine waves are continually varying in magnitude. They are zero at one instant and maximum at another. Serious complications would arise if an alternating-current volt or an alternating-current ampere were not the same as a direct-current volt or a direct-current ampere.

To make the two comparable, an alternating-current ampere is defined as that value of alternating current which will produce the *same heating effect in a given resistor as will be produced by a direct-current ampere.* This distinguishes the *effective value* of alternating current from the average value or the maximum value. An alternating-current volt is similarly defined.

The term *effective resistance* is used because the heat losses which *some* resistors, and especially iron-cored coils, offer to an alternating current are larger than those offered to direct current. For instance, if the frequency is high enough, the skin-effect losses in the wires of a resistor will cause the alternating current or effective resistance to be greater than the direct-current resistance.

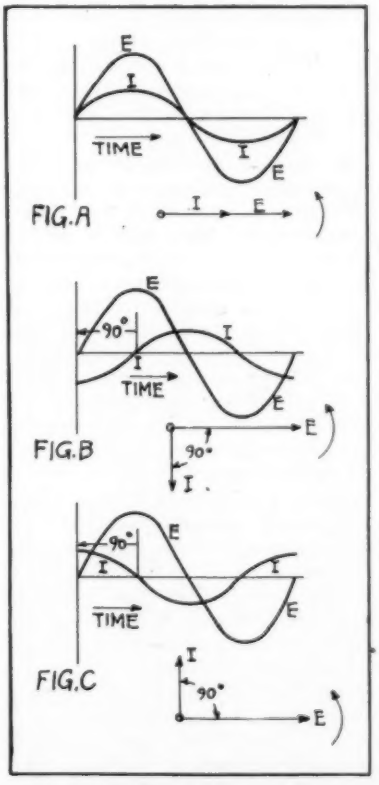


Fig. 3. Voltage and Resultant Current Waves for Different Relations Between Current and Voltage.

Alternating-Current Flow in Inductance: In a preceding article (TELEPHONY of February 16) it was shown that when a voltage was impressed across a coil of wire, the current through the coil did not immediately rise to its final value, but instead it slowly increased. The reason for this is that when the voltage is impressed and the current increases, a magnetic field is built up around the coil.

As these magnetic lines of force are established, they cut the turns of the coil and induce a *back* or *opposing* voltage in the coil. This back voltage opposes the impressed voltage, and only the *difference* between these two is effective in sending current through the coil.

Now, as the alternating voltage impressed on a circuit increases, the current tends to increase, but lags behind the impressed voltage due to the back voltage induced. These relations are represented for a coil having *only* inductance and *negligible* resistance by the curves and vectors of Fig. 3-B. Thus, a fundamental law of alternating-current circuits: *When an alternating-current voltage is impressed across an inductive circuit, the current which flows will lag the voltage.* The angle will always be less than 90°, and is determined by the relative amounts of inductance and resistance present.

Thus, in a coil of wire having inductance, there are two properties which oppose the flow of alternating currents. One is the *inductance* and the other the *resistance.* This may be illustrated in another manner. Suppose that a long, *straight* wire is available. In such a wire, the resistance will be about the only factor opposing the current flow.

If the same length of wire is wound into a coil, however, and the same voltage is impressed, the current flow will be very much less, because, when the coil is wound, inductance is added and this inductance unites with the resistance to oppose the current flow. In fact, the inductance is one factor determining the amount of back voltage; and since the current is continually changing, this back voltage is always present to combine with the resistance in opposing the current flow.

The back voltage induced in a coil depends on the rate of change of the flux, and this is determined by the rate of change of the current which produces the flux. It follows, therefore, that a given coil will offer more opposition to a high-frequency current than to a low-frequency one. The opposition offered by the inductance

through the induced back voltage is called the reactance, and is given by the expression:

$$X_L = 2\pi fL \quad \ldots\ldots\ldots\ldots\ldots\ldots (2)$$

In this expression X_L is the *reactance* in ohms when f is the frequency in cycles per second, and L is the inductance in *henrys*.

The resistance and reactance of a coil *do not add directly* to give the opposition the coil offers to current flow. Instead, they add at right angles as shown in Fig. 4. The hypothenuse or closing side of the triangle is represented by Z and is called the *impedance*. The impedance is the *total opposition a circuit offers to the flow of alternating current*. The relation between these values is as follows:

$$Z = \sqrt{R^2 + X^2} \quad \ldots\ldots\ldots\ldots\ldots\ldots (3)$$

The reason that the reactance, X, and the resistance, R, must be added at right angles is evident from Figs. 3-A and 3-B. The voltage across a resistor is *in phase* with the current through it, but the voltage across a coil is 90° *out-of-phase* with the current through it.

Alternating-Current Flow in Capacitance: In the preceding article, in which condensers and capacitance were discussed, it was shown that when a direct-current voltage was connected to a condenser, negative electric charges or electrons would flow through the connecting wires and would charge the condenser. These charges in motion constitute a current flow in the circuit.

When an alternating-current voltage is connected to a condenser, electrons flow to the negative plate and charge the condenser *when the voltage* is increasing, and flow black *when*

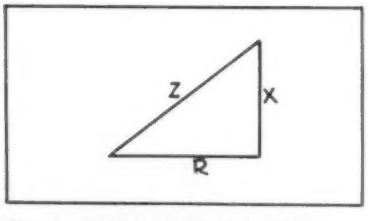


Fig. 4. Resistance, R, and Reactance, X, Add at Right Angles, Giving Impedance, Z.

the voltage is decreasing. Thus, when an alternating-current voltage is connected to a condenser, an alternating-current of the *same frequency* flows in the circuit.

An electric current may be defined from the relation $I = Q/t$. That is, the current flowing past a point may be expressed in terms of the quantity of electrons, Q, passing that point in t seconds. It follows, therefore, that for a condenser of given capacitance, the higher the frequency of the impressed alternating-current voltage, the faster the charges will surge back and forth in the circuit, and the greater will be the current flow.

The heat losses in a good condenser are negligible in most work, and will not be further considered. This means that although there is some I^2R heat loss (where R represents the *effective resistance* of the condenser) this loss may be neglected. This being true, there remain only three factors which determine the amount of current a given alternating-current voltage will cause to flow in a circuit of specified capacitance. These factors are: (1) the magnitude of the voltage, (2) the frequency of the voltage, and (3) the capacitance of the condenser.

The opposition which a condenser offers to the flow of alternating-current is termed the *reactance* of the condenser; it is measured in *ohms* and is given by the relation:

$$X_c = \frac{1}{2\pi fC} \quad \ldots\ldots\ldots\ldots\ldots\ldots (4)$$

Thus, $I = E/X_c = E2\pi fC$, and this substantiates the statement made in the last of the preceding paragraph. In these expressions the reactance is in *farads*.

The current which flows in a circuit containing only capacitance leads the voltage by 90° *as shown by Fig.* 3-*C*. This is another important law of alternating-current circuits, and can be explained in an elementary manner as follows:

At the instant a switch is closed connecting a battery to an uncharged condenser, there are no excess charges on the plates, and the voltage between the plates (or across the condenser) is zero. At the instant the switch is closed the current in the circuit jumps to a maximum value and the electrons rush to the negative plate. The current gradually dies out as the charges accumulate and the voltage builds up, because if two bodies are oppositely charged a voltage exists between them.

When the condenser is fully charged, the current becomes zero, and maximum voltage exists across the condenser. By extending this reasoning, it is evident that when an alternating-current voltage is impressed across a condenser, the current will lead the voltage.

Effective Resistance: The term "effective resistance" has been used several times, but has not been adequately discussed. When a circuit is energized from an alternating-current source, the following losses of energy may occur:

First, energy is dissipated by the current in passing through the ohmic or direct-current resistance of the wire; *second*, if the circuit contains iron-cored coils, energy will be dissipated in hysteresis loss in the iron core; *third*, eddy-current losses may occur in iron cores and in surrounding metallic objects; *fourth*, skin-

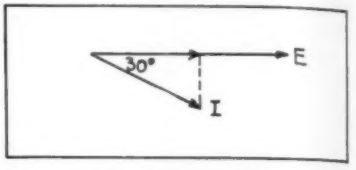


Fig. 5. Alternating Current and Voltage May Not Be in Phase and Work Together With Maximum Effect.

effect losses may exist in the wires; *fiifth*, dielectric losses in condensers may be appreciable; and *sixth*, energy may be radiated into space as in radio transmitting stations.

The effective resistance of a circuit may be found with a bridge as in communication circuits, or in power circuits, by dividing the power input (as given by a wattmeter) by the current squared.

To use a somewhat exaggerated illustration, as far as the voltage impressed across any circuit is concerned, all losses look the same, and it is, therefore, possible to lump all these loss-producing factors under the heading of *effective or alternating-current resistance*.

The effective resistance of some communication circuits increases very rapidly with frequency. The hysteresis loss of an iron-cored coil varies as the first power of the frequency, and the eddy-current losses vary as the frequency *squared*. These high losses are an important factor, limiting the use of iron-cored coils in radio-frequency circuits.

Power in A-C Circuits: In a previous article (TELEPHONY of January 5) it was shown that in direct-current circuits the power was given by the relation $P = EI$. Now, it is obvious that this simple relation will not hold in alternating-current circuits, for the *current and the voltage may not be in phase*, and may not, therefore, work together with maximum effect. This is made evident by Fig. 5.

Suppose that in Fig. 5 the current lags the voltage by 30°. That part of the current *in phase* with the voltage is the part effective in acting with the voltage to produce power. This in-phase component is $I \cos 30°$. The alternating-current power is then

$$P = EI \cos \theta \quad \ldots\ldots\ldots\ldots\ldots\ldots (5)$$

where E is the impressed alternating-

current volts, I is the current in amperes which flows, and $\cos \theta$ is the cosine of the angle by which the current *leads* or *lags* the voltage.

The cosine of an angle is a numerical value determined from trigonometry and merely gives the in-phase component when used as above. Its value can readily be found from trigonometric tables. Power is also equal to I^2R, where R is the *effective resistance* of the circuit.

Summary: An alternating-current voltage is induced in a coil of wire revolving in a fixed magnetic field. An example is the hand generator or magneto of the local-battery telephone set.

An alternating voltage forces an alternating current through a circuit. If the circuit is pure resistance, the current and voltage are in phase; if the circuit contains inductance, the current *lags* the voltage by an angle which approaches 90°; and if the circuit is pure capacitance (which can be closely realized in practice), the current will *lead* the voltage by approximately 90°.

The total opposition a circuit offers to the flow of alternating current is called the *impedance* and is represented by Z. The impedance of a circuit is composed of two factors, the *effective resistance* and the *reactance*, given in the following relation: $Z = \sqrt{R^2 + X^2}$.

Reactance is of two types; inductive reactance X_L and capacitive reactance X_C. The effective resistance is a term including all the heat losses in a circuit.

In alternating-current circuits the current and voltage may not be in phase, and, thus, the power is given by the relation $P = EI \cos \theta$.

Problems:

18. A current having a frequency of 1,000 cycles per second is used for testing purposes. How long will it take this current to increase from zero to the maximum value?

19. The inductance of a typical retard coil is 0.3 henry and the effective resistance is 175 ohms. Calculate the inductive reactance and the impedance offered a 1,000-cycle current.

20. Calculate the reactance of the coil of Problem 19 at 10,000 cycles, and at 100,000 cycles.

21. Calculate the reactance of a 2 microfarad condenser at 1,000, 10,000, and 100,000 cycles.

22. Calculate the impedance of a series circuit consisting of a 100-ohm resistor and a 1.2 microfarad condenser at 1,000 cycles.

Work out the answers to these problems and hold them to compare with the correct answers. These will be published with the next instalment of this series of articles on electrical fundamentals written for the telephone worker.

Second Safety Test

By JAKE, THE LINEMAN

Mornin', buddies. Wa'll, all of you had better put on yer thinking caps, sharpen your pencils and grab a pad of paper, 'cause I've got more questions in my head this morning than old John Public had when the government tried to explain the "whys" and "wherefores" of the New Deal to him. Our first safety test was received so well by you buddies that we have decided to send them at you as often as we have space.

I received answers to the January test from all over the country and L. J. Jester, trustee of the Mid-West States Utilities Co., thought enough of the test to have all of the plant employes under his supervision answer the questions and send them into me for grading. Mr. Jester offered a cash prize to the employe having the best paper and, believe you me, the competition for the prize was tough.

I am making mention of Mr. Jester's plan in the hope that other companies will get into line and have their men answer the questions, as I sincerely believe that such a test is one way of helping all telephone men toward a safer and better performance of their jobs.

The questions in test No. 2 this week have been selected after a careful review of a number of accidents which have recently happened among telephone workers and cover the points which were the direct cause of the accidents. I hope that every telephone man will carefully read the questions and then send in the answers to me. If that is done, it will be possible for this department of TELEPHONY to clear up many practices which are now causing accidents among telephone men, add to the general knowledge and safety and gradually lead the telephone workers of this country toward the elimination of accidents from their ranks.

So come on, buddies, get in on this test. All that you have to do is to write out your answers and send them in to me. Write them in pen, pencil, crayola or type them—but write them, some way, so that you can get in on the fun. In order that the questions may be handled promptly and efficiently I would like for you to observe these rules:

1. Study all questions over carefully before you attempt to write your answers. Make sure that you answer every part of the question. I was forced to deduct many points last time because entrants failed to answer all parts of the question.
2. After you have prepared your set of answers, send them in to Jake, The Lineman, care of TELEPHONY, 608 South Dearborn street, Chicago, Ill.
3. Attach a self-addressed, stamped envelope to your set of answers. This envelope will be used to return your corrected papers and your copy of the correct set of answers to you.
4. Endeavor to get your answers into this office by April 10.

After I receive your set of answers I will grade them and return them to you with a correct set of the answers which will be of real value to you in your daily work. The participants who send in the five best papers will be listed in TELEPHONY's safety roll of honor. It's worth shooting at, isn't it? Wa'll, here be the questions:

1. Before you climb a pole, what tests should be made to determine that the pole is in safe condition? Describe each test fully.

2. Answer each part of this question with either "yes" or "no."

(A) In approaching a "Stop" sign posted at a boulevard or through street, may a driver just slow up instead of actually stopping his car?

(B) In passing a car going in the same direction, is it safer to pass to the right?

(C) In making a right turn from one street to another, should the turn be made from the lane nearest the right edge of the street?

(D) If a car is about to be passed by another going in the same direction, has the driver the right to "hog" the road and keep the car behind from passing?"

(E) When two cars approach an intersection at right angles at approximately the same time, should the driver of the car on the right have the right-of-way?

3. Is it important that ladders be inspected for defects before they are used? Give five defects which you should be on the lookout for.

4. What is the correct treatment for creosote burns? Describe fully.

5. On jointly-owned poles, should the telephone wires and cable be placed above or below the power company's wires? Give reasons for your answer.

6. Should safety straps ever be used

to ride strand with? What should be used? Give your reasons for answer.

7. Under what conditions should a telephone worker put on his rubber gloves? How do you test your rubber gloves to make sure that they are absolutely safe?

8. Is it a safe practice to wear your climbers while you are doing ground work? Explain.

9. Explain the correct procedure of cleaning and dressing body belts and safety belts.

10. Before entering a manhole what tests should be made to assure the worker that the manhole is free from gas? If gas is found, what methods should be used to get rid of it?

Wa'll, there they be, buddies, and not a one of them is very hard. Just get the old mind a-working an' before you know it, you will have the answers all written out and ready to send in to old Jake.

I'll get going now, but I will be waiting for your answers so be sure to send them in as soon as possible. Until our next class, remember: "Practicing safety is one practice that will never hurt you."

Obituaries from the Field

J. E. Rowles, manager and one of the principal owners of the Wamego Telephone Co., of Wamego, Kans., died early this month, after suffering a heart attack while driving his car. Before he lost consciousness he had shut off the engine of his car, but it coasted some distance into a parked car in front of a battery station in Wamego. Mr. Rowles was found to have already passed on to the great beyond.

Mr. Rowles had lived a long and busy life. He was born in Akerton, Ohio, 75 years ago. With his family he moved to Kansas in 1870, his family locating near Laclede. Mr. Rowles made his home in Wamego in 1888 and was a resident of that city for the past 47 years.

In his long residence in Wamego, he occupied a distinctive place in the business and civic life of the community. He had served as councilman, as president of the council and as county commissioner. He was president of the First National Bank at the time of his decease. In nearly half a century of residence, Mr. Rowles had witnessed the transformation of Wamego from a frontier trading post to a prosperous residential and commercial city.

He is survived by his widow, three daughters and one son.

Julius M. Storkerson, superintendent of the LaCrosse (Wis.) Telephone Co. for the past 27 years—a veteran with 42 years of service in the telephone industry—passed away at his home in La Crosse on March 22, at the age of 58 years. Mr. Storkerson had been ill since the first of the year. Recently he suffered a paralytic stroke, from which it was believed he might recover. But on the evening of March 21 he suffered a heart attack and passed away the following morning.

Born in Rushford, Minn., on January 19, 1877, Mr. Storkerson moved to La Crosse, Wis., in 1891. After employment as delivery boy for a bakery, he entered the employ of the Wisconsin Telephone Co. as night operator and collector in 1893.

In 1898 Mr. Storkerson enlisted with company B, of the third infantry of the Wisconsin National Guard, and took a short leave of absence from his work with the telephone company to serve in the Spanish-American war.

After returning to LaCrosse he married Miss Mayme Woessner of that city in February, 1899. In 1900 he was promoted to wire chief for the Wisconsin Telephone Co. Three years later Mr. Storkerson left the Wisconsin company

J. M. Storkerson, Superintendent of LaCrosse Telephone Co., La Crosse, Wis., for Many Years, Passed Away Last Week.

to become wire chief for the LaCrosse Telephone Co. In 1907 he again joined the Bell ranks as superintendent of maintenance for the Michigan Bell Telephone Co. in Detroit, Mich.

In 1908 he returned to LaCrosse as superintendent for the LaCrosse Telephone Co., a position he held continuously from that time to his decease.

Mr. Storkerson in recent years became interested in developing the use of communication systems in the apprehension of criminals and the suppression of crime. He assisted in organizing what he called "Minute Men," and his organization of law enforcement officers and volunteers in many counties of Wisconsin became a reality on January 1, 1933.

News of the passing of Mr. Storkerson will be received with regret by many Independent telephone men. He was well known and highly respected in telephone circles, and his presence at Wisconsin telephone conventions will be sadly missed.

Mr. Storkerson is survived by one daughter, Mrs. Arthur Scheel of La Crosse; one grandson, Robert Scheel, of LaCrosse; and one brother, Harry Storkerson of St. Paul, Minn. His wife passed away on May 30, 1933.

Edward Hanley, manager of the properties of the Central West Public Service Co., at Welcome, Minn., and vicinity, and one of Independent telephony's early pioneers, passed away recently, after waging a long but losing fight against the ravages of pneumonia. Funeral services were conducted at his home in Welcome and his body was laid to rest in Lakeside Cemetery, Fairmont, Minn.

Mr. Hanley was born at North Freedom, Wis., September 16, 1870. Moving to Fairmont in 1893, he secured employment as a barber. Four years later he opened a barber shop in Welcome which he operated for a number of years. While so engaged he had a part in the organization of the Armstrong Telephone Co. toward the close of the 19th century and later became manager of the Welcome-Triumph Telephone Co.

He became one of the major stockholders of the company and directed its operations continuously up until 1929 when it was sold to the Central West Public Service Co. From that time until his demise, he had charge of that company's exchanges in Welcome, Triumph, Monterey, Ormsby and Fox Lake.

During his 37 years' affiliation with the telephone industry Mr. Hanley made many friends, by whom he was highly esteemed. He was a regular attendant at the annual conventions of the Minnesota Telephone Association and his advice was eagerly sought by younger men in the industry.

Mr. Hanley is survived by his widow, a son and six daughters.

Bay State Rates Discussed

LEGISLATIVE committee hears bills to revise New England Telephone & Telegraph Co.'s tariffs. Cost of service impracticable criterion of rates

ECHOES of the recent telephone rate battle before the Massachusetts Department of Public Utilities resounded in the hearing room of the legislative committee on power and light at Boston on March 13, when Wyckliffe C. Marshall of Watertown appeared in support of two bills (House 149 and 204) designed radically to revise the tariffs of the New England Telephone & Telegraph Co. within the state. Mr. Marshall was the chief antagonist of the company in the rate case which was closed last summer by a decision in its favor, and George R. Grant, general attorney for the New England Bell, again appeared in defense of its schedules.

House 149 requires that rates be based on the cost of each class of service rendered, such rates in no case without the approval of the commission (Mass. D. P. U.) to be made at less than the total cost to produce, sell and furnish such service to the respective customers.

House 204 established a set of rates for business and residential telephones for the Boston metropolitan area and another for outside exchanges, these being substantially the same as the set-up offered by Mr. Marshall before the commission and printed in TELEPHONY of July 29 and November 11, 1933. In brief, these ranged from $1.50 to $0.35 minimum charge per month with message rates of 3.5 to 1.5 cents according to class of service and area involved.

Flat Rates Attacked

In opening his argument, Mr. Marshall said that the commission had been requested to abolish flat-rate service in all but the country districts and substitute measured service in some form. The commission's refusal to change the rate schedules led Mr. Marshall to seek relief through the legislature.

He asked the committee to bear in mind that the governor of the state has no authority over telephone rates, and that for this reason the committee should have no hesitancy in enacting the bills, notwithstanding Gov. Curley's entry into the telephone rate situation by the conference method which led to recent reductions in prices for electricity.

The suggested cut of 15 per cent associated with the governor's recent move appeared to Mr. Marshall as arbitrary, and unless the proper changes are determined by careful analysis, the speaker held that they would have a tendency to wreck the telephone company and interfere with its service.

Mr. Marshall reasserted his belief that the New England company is operating in the state as an "outlaw" corporation, and declared that it should be required to become a domestic corporation. He declared that House bill 204 would save telephone customers $8,940,910 annually, largely in revenue from exchange service. The main station saving would be $7,770,079, and $630,000 a year would be achieved by eliminating the extra charge for handsets. Extension set rates would be cut $540,231 a year.

The speaker charged that the present schedule is exceedingly complex and argued that flat rates in certain suburban areas near Boston give the subscriber a vast amount of service below cost. Message rates, he declared, should be substituted for flat rates in view of the abuses to which the latter are subject. He favored retaining unlimited service in the agency exchanges located in rural areas.

Visualizes Market for Service

The speaker submitted data on property and taxation which, he said, indicated a large field for cultivation of telephone service. Mr. Marshall said that of 774,000 assessed dwellings in Massachusetts in 1932 there are 497,000 residence customers, leaving 247,000 houses which could be connected up with telephone service.

This, he asserted, does not reveal the total number of families which are telephone service prospects; and he maintained that the reduction in revenue through the substitution of the Marshall rates, as set forth in House bill 204, would be offset in a reasonable period by the gain in total business. House Chairman Comerford asked if the speaker had experience to prove his contentions, and Mr. Marshall replied that the growth of electric and gas service resulting from price cuts shows that the same thing would happen in telephony.

The speaker said that the New England company would benefit from wiping out the unlimited suburban service around Boston. For a single party line the rate is $5.50 a month and $4.50 for a 2-party line. This gives the subscriber unlimited service over about 440 square miles of territory, omitting the Boston exchanges serving the central in-town area. He asserted that only 8 per cent of the unlimited suburban service calls go beyond eight miles, and contended that the company suffers heavy losses from this unlimited-use, flat-rate business.

Mr. Marshall further said that "it is fallacious to attempt to base telephone rates on the value of the service, so-called, because we have no standard which can be reduced to mathematical terms. At the same time in any one exchange a housewife may be calling up the grocer, and another may be calling up a doctor about a serious surgical operation. Coincidently there may be a third party with the same type of service, a business man consulting with his lawyer.

"From the standpoint of the telephone user all these services would have value; all may be paying the company the same amount of money per month, but the service value may not be the same."

For this reason, the speaker said, it is desirable to put a promotional telephone rate into use. Mr. Marshall said that if the proposed 15 per cent flat cut in rates advocated by Gov. Curley should become effective, it would take about $7,500,000 from the company's revenue. Unless the number of subscribers were greatly increased, or depreciation reduced, the cost would have to come out of the employes. At the end of 1933 there were 19,000 employes in the New England company against 23,520 in 1929.

Before closing Mr. Marshall said that in his opinion the financial condition of the company is such that the proposed rates can be put into effect with advantage. He felt that much of the idle equipment of the company would be put to work by the increased business reduced rates would bring about.

Questions by the committee followed, in which considerable doubt was intimated as to the ability of the company to realize the gains in revenue needed to overcome the cuts proposed by Mr. Marshall.

Company's Defense of Present Rates

Mr. Grant opened his presentation by pointing out that House bill 204 not only completely ignores the Massachusetts Department of Public Utilities as a regulatory body (with inconsequential exceptions in less important rates) but it also passes by the idea of a legislative investigation of rates. He declared that Mr. Marshall's proposed rates are based on no experience in the making of telephone tariffs, and that the only purpose of these bills is to reduce rates.

"In all probability the legislature has full power to prescribe rates for tele-

phone service," said Mr. Grant, "but when it does so it is presumed to act with full and complete knowledge of relevant facts. It has been the experience of the country that such (legislated) rates are usually to be found lacking in constitutional requirements. This is due to the fact that legislative committees and the general body itself have not held fact-finding hearings and have not been fully acquainted with the circumstances under which the service is being rendered.

"Rates prescribed by legislation must stand the test of constitutionality just as rates prescribed by a commission. Such rates are usually found to violate due process and are set aside, because the hearing before the legislative committee in the short time available cannot go into all the facts nor allow the opponent to cross-examine or submit testimony.

A case in point before the United States Supreme Court is C. M. & St. P. Ry. Co. v. Tompkins (176 U. S. 173). This decision has never been changed nor affected in any manner. That case went to the South Dakota Supreme Court, where the railroad commission prescribed a maximum fare of three cents per mile on the railroads of the state. That rate was put into effect without any fact-finding hearing or any opportunity of the road to present testimony or cross-examine the proponent's witnesses, and largely for that reason the rates were held to be unconstitutional."

Mr. Grant said that the section of the bill proposing a few features of rate regulation for the Massachusetts commission to undertake is superfluous, as the board now has jurisdiction over such matters. He pointed out that House bill 204, with its stated rates, is inconsistent with House bill 149, which would require all telephone rates to be based on cost of service.

Manifestly the rates set forth in House bill 204 are not based on the costs of various types of service. For example, residence service on the whole costs more than business service, yet the bill provides for a differential in favor of the former. That these rates are not based on cost is shown further by the fact that they are the same for a station next to the central office and a telephone four miles away. If one bill is proper, the other is not: the company holds that neither is proper.

Measured business service is proper for Boston, Worcester and Springfield, but the level of such measured rates prescribed by the Marshall bill is too low. In Boston, present message rates range from 3.5 to 4 cents. The proposed rate is from 3 to 3.5 cents. In Worcester and Springfield the present message rates range from 3 to 4 cents, whereas the bill calls for 2.5 to 3 cents, without the slightest evidence to sustain the cut.

Marshall Rates Would Slash Revenue $10,000,000 Yearly

The New England Bell company computes that if the bill sponsored by Mr. Marshall should become law, it would cost the utility $10,000,000 yearly in revenue alone. In addition the company would face the obligation to spend large sums in rearranging lines and central office equipment.

In spite of these tremendous sums, perhaps one of the greatest calamities from the bill would be the disastrous effects on service and the welfare of women workers, of whom there are 20,000. To these the company paid over $30,000,000 in 1934, or about 45 per cent of its gross revenue of $66,000,000, as against $8,000,000 in dividends. This revenue was $9,000,000 less in 1934 than in 1931, and the rate of return for 1934 was only 4.25 per cent on the cost of the property (over $304,000,000). In January, 1935, the rate of return was just 4 per cent.

The loss which the company would sustain under this bill would reduce its inadequate return to about 1 per cent. Such figures shout loudly against the measure. The foregoing rates of return were based on book costs, and would be lower if based on fair value, which is the real rate base as approved by the United States Supreme Court.

6 to 8 Per Cent Fair Return

Mr. Grant pointed out that Mr. Marshall had stated before the committee at a hearing in February, 1935, that 5.5 per cent return is fair, reasonable and approved by the courts. As a matter of fact, in cases decided during the last three years various rates of return have been approved, from 6 to 8 per cent in 12 states—Kansas, Minnesota, Kentucky, Indiana, South Carolina, Oklahoma, Ohio, Pennsylvania, Illinois, Maryland, New York and Washington—and rates from 4.5 to 6 per cent have been held too low to escape the red line of confiscation in six states.

The most recent case from the United States Supreme Court on this point is West Ohio Gas Co. v. Ohio Public Utilities Commission, decided January 7, 1935. In that case the court said that 4.53 per cent is too low to satisfy constitutional requirements.

Touching further on the handicaps of covering telephone rates in a legislative committee hearing, Mr. Grant said: "Mr. Marshall asks you on the spot and unaided to hear and decide the rate case which he has already presented to the Massachusetts Department of Public Utilities with no success; in which case he presented 800 exhibits from material which we furnished him at great expense, some covering over 100 pages each. No arguments are required to show that the idea is preposterous."

Great Abuses Threatened

The proposed rate schedule provides a readiness-to-serve charge and a monthly minimum charge with no messages, and a charge for each outgoing call. Mr. Grant said that a monthly minimum as low as 35 cents would encourage extravagant use of telephone equipment.

Such low charges would invite installation of telephones for incoming calls alone in cases in which there would be no outward calls used. Father, mother and each of the children could each have a separate line. There might be six such telephones in a house for $2.10 total per month. Five of these might be used for incoming calls alone and one for outward calls. The wasteful use of telephone equipment under this schedule is apparent.

Representative Falvey pointed out that the company is not getting any reevnue today from telephones in homes that are supposedly disconnected. He asked if it would not be worth while if the company could get even a dollar a month from such telephones.

Mr. Grant admitted the desirability of receiving such added revenue, but pointed out that the distribution of the equipment for service is beyond the company's control. When the demand comes from Mr. Brown to put in six telephones for himself, his wife and four children, in all probability it will not be a house where the company's present equipment is located, and the company would have to go out and build new plant wastefully.

Tried and Found Wanting

"Rate schedules of this type have been heard of twice in other parts of the country," said Mr. Grant. "Someone

COMING CONVENTIONS

Kansas Telephone Association, Hotel Kansan, Topeka, April 10 and 11.

Georgia Telephone Association, Piedmont Hotel, Atlanta, April 17.

Ohio Independent Telephone Association, Hotel Deshler-Wallick, Columbus, May 1 and 2 .

Indiana Telephone Association, Claypool Hotel, Indianapolis, May 8 and 9.

Pennsylvania State Telephone & Traffic Association, Penn-Harris Hotel, Harrisburg, May 14 and 15.

had this idea out in Wisconsin a few years ago, and it was presented. It was considered by the Wisconsin commission, which always has been considered a board of repute, and was immediately discarded.

"The state of Washington prescribed such a schedule for Everett, which is served by the West Coast Telephone Co. A public utilities opponent came here last week and announced that the Washington commission is one of the very ablest regulatory bodies in the United States. I have no quarrel with that, but let us assume that; then what did the commission do with the rate schedule such as Mr. Marshall proposed?

They tried it out about one year and then abolished it because it was unworkable and disastrous in every respect. Under pressure, such as no doubt all commissions feel at times, the rate was tried. It lasted six months, when the commission discarded it again; and upon that action the final act of the board was approved by the Washington Supreme Court. In no other state has such a fantastic and generally disastrous schedule been suggested"

Cyclone Cellars Needed

The present New England Bell schedule offers flat-rate residence service in all exchanges except Boston Central, a concentrated business area; and flat-rate business service except in the large exchange centers of Boston, Worcester and Springfield.

Flat rates are very popular for residence service, Mr. Grant said, and have been for many years. They are likewise popular and also proper for business service in the groups of exchanges to which they are applied. Any attempt to take them away would arouse a storm of protest from one end of the state to the other and of such intensity as to cause those responsible to go into hiding.

Sixty per cent of the New England Bell company's measured service in metropolitan Boston is on dial equipment. In that area there are thousands of four-party, flat-rate residence services which could not be measured on dial equipment, as there is no device made which will accomplish this.

Mr. Grant said that if measured service should be required along the Marshall lines, the company would be obliged either to curtail dial use in metropolitan Boston; abolish four-party service in that area, or ticket all four-party calls and count them by hand, a laborious and costly task. Large centers are better served by measured service and small centers by flat rates. Metropolitan rates cannot be forced on places not metropolitan in nature.

The bill calls for the cancellation of municipal discounts. The company has no quarrel with this idea, but suggests that the elimination of such discounts at this time would be unwise from both political and corporation standpoints. Municipal discounts are now authorized by law.

"Mr. Marshall," said Mr. Grant, "asks the legislature to displace the schedule which has been in effect since 1925 and which was again approved by the Massachusetts commission in 1934. He has asked the reversal of the legislature's own agent, the Massachusetts Department of Public Utilities, and to do so without any deliberation and with no proof other than his own inexperienced conclusions.

"To require the company to operate under the law he seeks, at a rate of return as low as 1 per cent, would constitute confiscation without the slightest doubt. The greater our business under this schedule, the greater would be our loss. I trust you will report this bill adversely. If such a rate schedule as is here proposed is to be seriously considered, it should go to the department where it belongs, for such hearing as that body may deem fit and lawful." (EDITOR'S NOTE: Mr. Marshall has asked the commission to reopen the rate case.)

In closing his argument against House bill 204, Mr. Grant stated that the license contract of the New England company with the American company saves the former about $7,000,000 a year, the cost of the service being about $1,000,000. This service could not be performed by the New England company for itself.

Mr. Grant said that in discussing the holding company bills before the committee, Mr. Marshall and Secretary Moulton of the Public Franchise League had referred to what they called the "Massachusetts Rule" of rate basing as against the "Federal Rule."

No such rule exists in either case, Mr. Grant said. The United States Supreme Court has many times said that a public utility is entitled to earn a fair return on the fair value of its property devoted to the public service. This is the law of the land, and applies to all the states. The idea that there could be a different rule in Massachusetts has sprung from the habit of a few to consider the dissenting opinions as the law.

"The Massachusetts Department of Public Utilities," said Mr. Grant, "has arrived at rate bases in different cases by different methods, and has decided cases without ascertaining any rate base. Its purpose is to provide rates which will maintain the company's stock on the market above par. It has, therefore, approved returns on prudent investment (Middlesex & Boston case).

"Contrary to Messrs. Marshall and Moulton, property built from surplus should be considered in a rate base (the Fall River Gas case and many decisions of the United States Supreme Court, as in the Southwestern Bell Telephone, Georgia Railway & Power and Bluefield Waterworks cases are illustrative). The latest case on this subject is the West Ohio Gas case. All these reannounce the law of the land, which applies to Massachusetts as elsewhere.

Secretary Moulton was in error in stating to the committee that the decision in Smith v. Illinois Bell, decided three years ago, favored cost as against value for a rate base. When this case first came before the court, Chief Justice Hughes returned it with the direction to ascertain value of the property, for without it there could be no decision. This case came to the court the second time as Lindheimer v. Illinois Bell, and the final decision turned not on the question of property value, but on operating expenses.

No case from Massachusetts has gone to the United States Supreme Court on this question of rate base, and until one does we shall probably continue to hear loose talk about the so-called Massachusetts theory."

The hearing was then closed.

• • •

Answers to Traffic *Questions on Page 12*

1. The IN ticket is completed for billing.
2. The time interval involved in the handling and completing of local and long distance calls.
3. As long as the calling party wishes further attempts made on the call.
4. The toll center operator is responsible for the clearance of the circuit.
5. See introduction to this series.

Decade of Telephone Progress in Australia

Statistics on Australia's telephone development during the 10 years ended with June, 1933, made public recently, revealed the fact that the total number of telephones had increased from 282,087 to 487,662; exchanges, from 3,010 to 6,073; miles of wire in use, from 146,550 to 2,587,391, and the number of telephones per 100 population, from 4.98 to 7.36.

The Electrical Review of London quotes S. R. Roberts, deputy director of posts and telegraphs in Australia, as stating that the extension of publicity to embrace newspaper advertising has been productive of most satisfactory results.

Trunk
Switchboard
Cape Town Exchan

FEATURES

Cordless Board—all operations controlled by key-calls set up by dial or keysender.

Calls automatically answered in order of arrival.

When no free trunk line is available by direct or alternative route, the call is automatically stored on connecting circuit and the operator is signalled when a line becomes available.

Call storage and congestion indicator showing state of congestion on any group at a glance.

Night concentration facilities.

A.C. or voice frequency signalling individual to a trunk line.

Trunk offering over regular switching train.

The timing of each trunk conversation is automatically recorded on cessation of conversation.

Observation facilities for traffic records.

Automatic recording of traffic density on trunk switches.

SIEMENS BROTHERS & CO.,

Representation Abroad: Melbourne, Sydney, Brisbane, Adelaide, Newcastle (N.S.
Madras, Rio de Janeiro, Colombo, Shanghai, Cairo, The

UTOMATIC TRUNK SWITCHBOARD

GENERAL

The Siemens Automatic Trunk Switchboard, in accordance with the best modern practice for handling telephone traffic, makes the most effective use of automatic switching.

It is an entirely novel type of equipment, designed especially for overseas conditions to secure maximum efficiency in trunk operating and yet enable first-class "on demand" (CLR) service to be given with a restricted number of trunk circuits.

It facilitates to the greatest possible extent the handling of all calls at the position in which they originate, and practically eliminates the wasteful double operating and delay which results from passing tickets to delay positions when no free circuit is available to the demand (CLR) operators.

A very considerable reduction in the number of positions and operating costs is thus effected by the use of this switchboard.

PERFORMANCE

The performance in practice fully substantiates the claims we make.

In South Africa, the Cape Town installation, opened for service over a year ago, has proved completely successful. The Officials and Operators of the Telephone Administration are enthusiastic and, as a result, equipment of similar type has been ordered for Johannesburg.

L' WOOLWICH, LONDON, S.E.18.

Johannesburg, Cape Town, Port Elizabeth, Durban, Winnipeg, Calcutta, Bombay, Ipoh, Kuala Lumpur, Malacca, Malta, Bangkok, Wellington, Auckland, etc.

Financial Operating News and Data

Illinois Bell Makes Annual Report for 1934

The annual report of the Illinois Bell Telephone Co., Chicago, Ill., for the year ended December 31, 1934, made public recently, discloses the fact that last year was recorded the first important increase in stations since 1929 and the first increase in toll business since 1930.

During 1934 there was a net increase of 30,439 stations as compared with net losses of 174,676 in 1932 and 52,130 in 1933. Only in July, seasonally a low month, was a net loss experienced. There were a total of 200,145 connections and 169,706 disconnections. Changes in locations made during the year totaled 111,171.

The total number of stations which the company had in service at the close of 1934 was 1,483,785. This included 1,191,867 company stations; 8,954 service and private line stations and 282,964 connecting company stations.

There were 291 company central offices and 861 connecting company central offices, making a total of 1,152. The Illinois Bell system served 12,160 private branch exchanges and 425 connecting companies.

The company's wire mileage at the close of 1934 totaled 6,394,127. Of this total 1,202,261 miles were in aerial cable and 5,107,706 in underground cable.

The employes totaled 24,231. Of this number 8,354 were men and 15,877 were women. The payroll expenditures for the year totaled $32,245,977.

Gross additions to plant and equipment amounted to $13,532,222, while the net increase was placed at $1,494,483. The principal items follow: Land and buildings, $153,297; switchboard and other exchange equipment, $1,524,433; subscribers' station equipment, $9,635,603; exchange and toll lines, $1,716,945.

During the year the company completed a two-story addition to its Calumet central office building in Chicago. The installation of the equipment is under way and is expected to be ready for service by the middle of the year.

The annual report states that service has been maintained at, or slightly above, the excellent records of previous years. Originating local calls averaged 5,092,676 daily, practically the same as in 1934.

By the close of 1934 more than 194,000 separate payments of refunds and interest, totaling $3,745,000, had been made by the company in compliance with the decree handed down April 30, 1934, by the United States Supreme Court. This unprecedented decision upheld rate reductions for users of coin-box service in Chicago, as prescribed by the Illinois Commerce Commission on August 16, 1923, and ordered the refunding of the excess charges to this class of subscribers for the 11-year period, with interest. (See TELEPHONY of May 12, 1934).

The income statement of the Illinois Bell (presented in the accompanying table) shows net earnings for 1934 of $14,877,897 and net income of $7,258,501. These results, according to President F. O. Hale, are not directly comparable with 1933 because of the adjustments made in carrying out the refund order of the United States Supreme Court. Eliminating these adjustments for comparative purposes, net earnings were at the rate of 3.92 per cent on the company's total assets of $328,526,000 and the net income was $6.66 per average share of capital stock outstanding.

Because of the effect of the refund decision on earnings and cash resources Illinois Bell dividends usually paid in June and September were omitted. On March 1, 1934, a payment of $2 per share was made and on December 31 a payment of $1.50 a share was made.

The past year marked the retirement of Wm. Rufus Abbott as chairman of the board of directors, after more than 45 years in telephone work. The vacancy on the board of directors caused by his retirement was filled by the election of Wm. Scott Bond to the company's directorate.

Half of a $367,000 increase in commercial expenses for the year was attributed to the refund order. Likewise, $870,000 was added to accounting and treasury department expense, which rose from $2,312,837 in 1933 to $3,181,861 last year.

Local service revenues were down from $56,734,952 in 1933 to $40,819,656 in 1934. Total operating revenue dropped from $72,204,380 to $58,337,011.

Operating expense was cut from $50,115,401 to $35,984,299. This was accomplished by $4,174,034 being taken from

Local service revenues	$40,819,656
Toll service revenues	15,518,631
Miscellaneous revenues	1,180,767
Total	$57,519,054
Less uncollectibles	(b) 817,957
Total operating revenues	$58,337,011
Current maintenance	$13,820,521
Depreciation expense	(b) 4,174,034
Traffic expenses	12,438,251
Commercial expenses	(c) 6,394,817
Operating rents	1,095,504
General and miscellaneous	6,409,240
Total operating expenses	$35,984,299
Net operating revenues	22,352,712
Taxes	8,442,949
Net operating income	13,909,763

Note (b) Negative amounts.

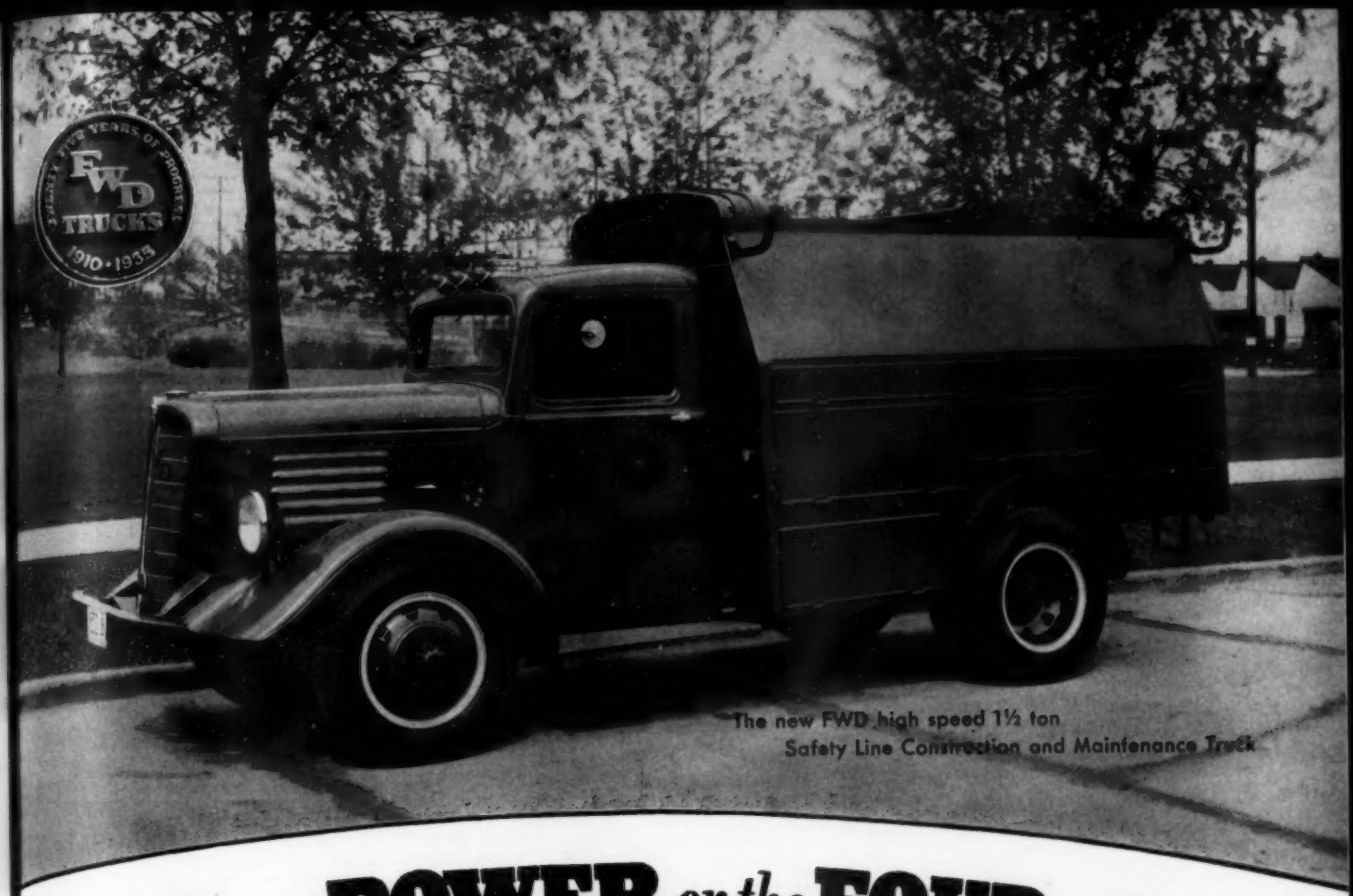
Note (c) Commercial expenses include approximately $136,000 and accounting and treasury departments' expenses include approximately $870,000 incurred in 1934 in the handling of refunds to Chicago coin-box subscribers under federal court order.

Net operating income (brought forward)	$13,909,763
Net non-operating income	968,133
Income available for fixed charges	14,877,897
Bond interest	2,436,310
Other interest	5,060,043
Amortization of discount on funded debt	123,042
Total fixed charges	7,619,395
Balance available for dividends	7,258,501
Dividends on common stock	5,250,000
Charged against income	5,250,000
Charged against surplus	

Note (a) The income statement for 1934 reflects the following adjustments in accounts listed, made in connection with federal court order requiring refunds to Chicago coin-box subscribers.

Decreases:	
Local service revenues	$15,948,059
Uncollectible operating revenue	985,000
Depreciation expense	15,948,059
General miscellaneous expenses:	
Services rendered under license contract	429,601
Taxes	434,905
Increases:	
Net operating income	154,189
Other interest	4,731,738

Income Statement of Illinois Bell Telephone Co. for 1934 Said to be Incomparable With 1933 Because of Adjustments Made in Carrying Out Refunds to Coin-Box Subscribers in Compliance With Order of United States Supreme Court.



The new FWD high speed 1½ ton
Safety Line Construction and Maintenance Truck

LOAD *and* POWER *on the* FOUR wheels make the FWD a SAFER truck

The front axle of the FWD is set back farther from the front end of the truck than is conventional practice . . . This was done for a purpose . . . It places more of the weight on the front axle . . . Since more weight is placed on this axle and because there is ALSO POWER on this axle, the driver has more control over the truck . . . There is not the danger of sluing or skidding on slippery or icy roads, or on curves . . . The front wheels of the FWD grip the road . . . This feature is an advantage in Public Utility Service, not only as a safety factor, but also where extra performance is needed . . . The four driving wheels carry the truck in and out of ditches and other difficult locations where line construction and line maintenance must be performed.

FACTS ABOUT FWD TRUCKS

Greater Safety. Front axles are set back. Power, as well as load on all four wheels, gives the FWD sure footing on slippery pavements, in congested traffic, and when going around curves.

Greater Dependability of Service. Reserve power, rugged construction throughout, and true application of the four-wheel drive principle, insure continuous operation under any condition. Backed by a nation-wide organization of parts depots and service men available at a moment's notice.

Faster Service. FWDs, with their powerful engines, wide range of gear ratios and four-wheel traction cut down trip time by being able to "make" the hills, curves, and poor going, faster than average trucks. No necessity for over-speeding on the straight stretches.

Wider Range of Operation. Four-wheel traction enables the FWD to handle its regular hauling job easily and do the tough jobs as a matter of course.

Operating Economy. Definite savings are made in gasoline, tire wear, maintenance cost, and other "out-of-pocket" expenses. This is the result of equal distribution of power and load and scientific four-wheel drive construction throughout.

BACKED BY AN INTERNATIONAL SERVICE SYSTEM

FWD TRUCKS

THE FOUR WHEEL DRIVE AUTO COMPANY
Clintonville, Wisconsin
Canadian Factory: Kitchener, Ontario

☐ The Snow Removal Problem ☐ Use of Extreme Pressure Lubricants ☐ Truck and Trailer Size and Weight Restrictions ☐ Effects of Front Wheel Stability on Public Safety ☐ Purdue University Efficiency Test ☐ Cutting Costs with the FWD Road Maintainer ☐ Making the Most of Controlled Power.

Mr. _____

Title _____

Address _____

City _____ State _____

depreciation, while $11,791,272 was charged off in 1933.

The balance sheet also shows a number of changes. Accounts payable rose from $2,213,713 to $18,997,008 to give effect to $16,134,621 owing for refunds as of last December 31. Current liabilities rose from $18,288,417 to $29,298,087. The surplus account rose $1,895,000.

Current assets increased from $24,630,325 in 1933 to $28,282,226. Cash jumped from $1,422,658 to $4,713,042. Temporary cash investments in government obligations and municipal tax warrants rose from $7,887,906 to $11,615,700. Accounts receivable dropped from $11,281,419 to $7,073,745.

The assets for 1934 totaled $331,498,168 as compared with $326,153,423 in the preceding year.

The officers and directors of the Illinois Bell Telephone Co. are as follows: President, F. O. Hale; vice-presidents, A. H. Mellinger, U. F. Cleveland, G. K. McCorkle and H. W. Bang; secretary and treasurer, A. R. Bone; general auditor, A. Perrow; general counsel, K. F. Burgess; general manager, Chicago area, W. O. Kurtz; general manager, state area, P. J. Ramsey.

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Associated Telephone Shows $120,645 Increase

Gross operating revenues of the operating subsidiaries of the Associated Telephone Utilities Co. increased $120,645.56, from $10,627,612.66 in 1933 to $10,748,258.22 in 1934, according to the report to stockholders by William J. Wardall, as trustee of the estate of Associated Telephone Utilities Co., debtor.

Net income of subsidiaries before depreciation also showed an increase from $2,776,082.72 in 1933 to $2,794,530.81 in 1934. An increase in depreciation charges of $244,183.07 during the last year, however, was primarily responsible for a decrease in earnings after all fixed charges and depreciation, but before fixed charges of the holding company. This figure was $955,863.77 for 1934 as compared with $1,181,573.75 for 1933.

The figures do not include the Central Telephone Co., the Standard Telephone Co. and their subsidiaries. The Central Telephone Co. is in bankruptcy and the Standard Telephone Co. is in a reorganization proceeding under Section 77-B. These groups are not included in the reorganization plan of Associated Telephone Utilities Co., upon which a hearing for final confirmation will be held in the federal district court in New York on May 9.

Combined net working capital of the operating subsidiaries of the Associated Telephone Utilities Co. as of December 31, 1934, was $3,063,102.23. These operating companies showed combined cash and government securities on hand of $3,350,466.21; Associated Telephone Utilities Co. itself showed, in addition, cash and government securities on hand of $1,797,216.67.

The report shows an increase of approximately 2 per cent during 1934 in the number of stations owned and serviced by the operating subsidiaries. A loss of about 6.6 per cent in stations owned and serviced was reported in 1933.

Local service revenues	$26,404,293.96	Net operating income (brought forward)	$ 7,373,816.00
Toll service revenues	6,281,956.92	Net nonoperating income	60,651.95
Miscellaneous revenues	1,430,660.35	Income available for fixed charges	$ 7,434,467.95
Total (a)	$34,116,911.23	Bond interest	$ 238,250.00
Less uncollectible operating revenues (b)	5,988.44	Other interest	405,021.96
Total operating revenues	$34,110,922.79	Amortization of discount on funded debt	2,303.82
Current maintenance	$ 5,954,390.85	Other fixed charges	1,800.20
Depreciation	6,552,782.03	Total fixed charges	$ 647,375.98
Traffic	4,102,564.57	Balance available for dividends	$ 6,787,091.97
Commercial	2,540,454.59	Dividends on common stock	None
Operating rents	422,968.12	(No dividends paid for year 1934)	
General and miscellaneous expenses	2,965,895.39	Income balance transferred to surplus (c)	$ 6,787,091.97
Total operating expenses	$22,539,055.55		
Net operating revenues	$11,571,867.24		
Taxes	4,198,051.24		
Net operating income (carried forward)	$ 7,373,816.00		

(a) Includes $2,102,801.53 and $2,031,478.44 in years 1934 and 1933, respectively, collected under bond pending final adjudication of rate inquiry.

(b) The decrease in provision for uncollectible operating revenues in 1934 is due principally to improved collection conditions experienced during the year. In addition the account reflects some adjustments of the charges made in prior years against anticipated losses.

(c) As of December 31, 1934, this amount was transferred from unappropriated surplus to surplus reserved as provision against contingencies including possible rate refunds.

Condensed Earnings Statement of the Ohio Bell Telephone Co. for the Year 1934.

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Ohio Bell Company Issues Report for 1934

The annual report of the Ohio Bell Telephone Co., made public this week, reflects a small increased demand for telephone service in 1934 and an appreciable reduction in disconnects. The year was closed with a total of 549,900 telephones in service, an increase of 18,474 stations (or 3.4 per cent) over 1933.

The total operating revenues amounted to $34,110,923, an increase of $1,392,441 or 4.3 per cent over 1933. Local operating revenues showed an increase of $472,546 and toll revenues an increase of $610,285 over the preceding year.

Taxes assignable to operations amounted to $4,198,051, an increase of $13,748 over 1933. The total taxes last year represented 36 per cent of the company's net operating revenues, or $7.74 for each telephone per year.

Expenditures for additions and betterments to plant totalled $6,313,971. Plant which cost $7,262,254 was retired, resulting in a net plant increase of $948,282. The operating expenses totalled $22,539,056, an increase of $538,560, or 2.4 per cent over 1933.

On this page is published the company's income statement for 1934.

The balance sheet as of December 31, 1934, shows total investments of $171,844,577, including these items: Telephone plant, $167,372,163; organization expense, $195,799; investments in controlled companies, $186,255; other investments, $1,723,194; miscellaneous physical property, $2,327,920; sinking funds, $39,246. Adding current assets of $6,965,431 and deferred debits in the amount of $879,276 brings the total assets up to $179,689,284.

The assets are offset by these liabilities: Common capital stock, $130,000,000; long-term indebtedness, $8,230,916; current and accrued liabilities, $5,893,215; deferred credits, $161,716; depreciation reserve, $25,488,136; other reserves, $25,719,896; surplus reserved to cover contingencies, including refunds, if any, upon termination of pending rate case; unappropriated surplus, $646,450.

The Ohio Bell company continued during the past year to handle service installations on an appointment basis with the customer, 98 per cent of such appointments having been met.

Service pensions amounting to $137,681 were paid to retired employes during 1934. In addition, $213,602 were paid to employes for sickness and accident disability, death and other benefits.

The Ohio Bell gave employment to 5 per cent more people during 1934 than during the last half of 1933. Much credit for the increased business enjoyed by the company is attributed to the tireless efforts of its employes.

Randolph Eide, president of the company, makes these comments regarding cooperation between the Independent companies of Ohio and the Bell System in his report to the stockholders of his company:

"Excluding the territory operated by the Cincinnati & Suburban Bell Telephone Co., there are approximately 252,000 telephones in Ohio operated by 308 separate companies that are not owned by the Bell System. These companies furnish service to many important communities in the state.

Connecting arrangements are in effect between each of these companies and our long distance system, so that all of the telephones operated by these separate companies may not only be interconnected with practically any telephone in Ohio but also with any Bell owned or Bell connected station throughout the world.

In order to maintain a universal service to the public, cooperation between the Bell System and these locally-owned companies is highly essential. That the managements of these connecting companies in Ohio have given such cooperation is evidenced by the high quality of service in the interchange of business between their customers and those of our company."

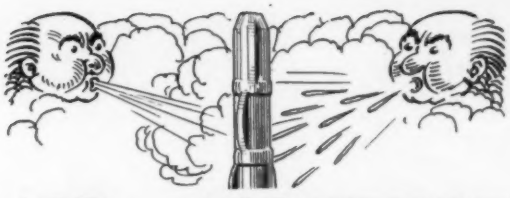
The Ohio Bell company operates 549,900 stations, 217 central offices and 4,316 private branch exchanges. It furnishes service to 4,562 service and private line stations and connects with 251,633 stations owned by Independent companies.

The company has a total of 14,322 miles of pole line and 3,261,970 miles of wire. It has 8,036 employes, with a total payroll expenditure of $12,124,820 for the year 1924.

• • •

Bell of Canada Has Surplus After Dividends

The annual report of the Bell Telephone Co. of Canada for the year ended December 31, 1934, shows increased earnings and improved financial position. Gross telephone operating revenue of $36,005,265 rose more than $1,000,000 over 1933.



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Make the Ideal Line Joint

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When the splices on your lines are made with NICOPRESS SLEEVES you can be absolutely sure that no air or moisture can seep in to cause trouble.

There's a reason. Every NICOPRESS SLEEVE is coated on the inside with nichrome, an alloy harder than the copper in sleeve and conductor and when this hard metal is forced into them under pressure, the joint formed is perfectly tight.

Test after test has proven that once made a NICOPRESS joint will not break and the wires will not pull out.

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In the Air or on the Ground . . . The Joints are Quickly and Easily Made . . .

. . . with NICOPRESS SLEEVES. The job of making the splice with the handy, efficient NICOPRESS Tool is simply and quickly performed and every lineman on your crew will make uniform, lasting joints that will assure service. All that is necessary is to push conductors into sleeve until they butt at center, give two pressures with the tool on each side and the ideal trouble-free splice is made and made to stay.

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Write for complete information and prices today.

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If it's a SPLICE make it a NATIONAL NICOPRESS

The amount available for fixed charges was $8,862,564, or more than twice the necessary $4,060,211. The balance applicable to capital stock was $4,802,353, equal to $6.20 a share on 774,151 shares outstanding at the end of the year. This compares with net of $4,329,442 in 1933, or $5.62 a share on 770,820 shares.

Dividends paid last year amounted to $6 a share, leaving a surplus of $166,824 to be carried forward, as compared with a deficit of $292,277 in 1933.

• • •

Meadville (Pa.) Company Report for 1934

An increase of 186 stations, an increase in local revenues of 1.49 per cent and an increase in toll revenues of 7.92 per cent, as compared with the preceding year, is shown in the 1934 annual report of the directors of the Meadville (Pa.) Telephone Co. as presented recently to the stockholders by Vice-President John H. Wright, of Jamestown, N. Y.

Assets	
Real estate	$ 115,024
Telephone plant and equipment	658,805
General equipment and supplies	52,751
Organization	24,991
Investment securities, at cost	113,734
Cash and deposits	33,156
Assets in special funds	7,000
Bills and accounts receivable	17,528
Prepaid expenses	2,181
Unamortized discount on funded debt	11,532
Deferred debits	168
	$1,036,870

Liabilities		
Capital stock — common ($25 par)		$ 150,000
Capital stock — preferred 7 per cent cumulative ($25 par)		274,275
Authorized—24,000 shares.		
Par value of preferred stock outstanding	$275,000	
Less—held in treasury	725	
	$274,275	
Funded debt		344,400
Bills payable		21,400
Accounts payable		10,755
Other accrued liabilities—not due		17,440
Insurance and provident reserves		6,959
Deferred credit items		2,128
Reserves for depreciation		87,179
Unappropriated surplus		122,334
		$1,036,870

Balance Sheet of Meadville Telephone Co., Meadville, Pa., as of December 31, 1934.

The company now operates from its eight exchanges 4,092 owned stations and 55 connecting stations, a total of 4,147. The total is 600 less than the figure for the peak year of 1930, namely, 4,747 stations. On December 31, 1934, the company had 328 miles of pole line, 4,772 miles of wire in local service, 743 miles of wire used in toll service and 2,558 miles of underground wire.

A daily average of 21,885 messages was completed by the company in the past year, while the outward toll messages totaled 158,070. The average number of employes in 1934 was 74, with a total payroll of $62,345.

Mr. Wright reports that last year the engineering and accounting departments completed a comprehensive study of the depreciable property of the company and determined annual rates of depreciation to be charged on various classes of property. The work covers a period of three years' preparation and the results are said to be very comprehensive. As a result thereof, the annual rates of depreciation were slightly reduced.

The local operating revenues of the Meadville Telephone Co. for 1934 amounted to $138,084, an increase of 1.49 per cent over 1933. Toll revenues amounted to $25,572, an increase of 7.92 per cent. Miscellaneous operating revenues amounted to $2,927, a decrease of $216 from the previous year. Subtracting $3,572 in uncollectibles (a decrease of $575 as compared with 1933) left total operating revenues of $163,011, an increase of 2.73 per cent over 1933.

Current maintenance for 1934 amounted to $25,614, an increase of $2,421 over 1933. There was set aside for depreciation the sum of $33,557, a decrease of $53 from the previous year. The total reserve for depreciation was increased by $11,737 to $87,178.

Traffic expenses amounted to $26,308, an increase of $865 over 1933. Commercial expenses increased $347 to $5,421. General office salaries and expenses decreased $194 from 1933 and amounted to $12,193. Other operating expenses were $5,548, a decrease of $1,431 from 1933. The total operating expenses increased $1,955 and amounted to $108,641, an increase of 1.80 per cent over 1933.

The net income available for fixed charges in 1934 was $51,633, an increase of $4,852 over 1933. The interest on the funded debt was earned 2.5 times and dividends of 7 per cent on the preferred stock were earned 1.5 times.

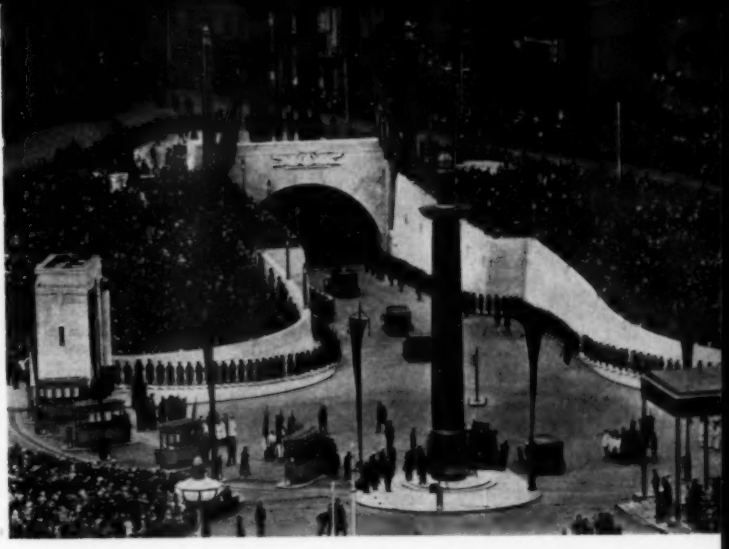
During the year $125 par value of preferred stock was retired and at the end of the year $2,000 par value of the funded debt and $725 par value of the preferred stock were held in the treasury of the company. Dividends of 7 per cent on the preferred stock amounting to $19,240, and 6 per cent on the common stock, amounting to $9,000, were paid during the year.

The condensed statement follows:

Operating Revenues		
Local service		$138,084
Toll service		25,572
Miscellaneous		2,927
		$166,583
Less — uncollectible operating revenue		3,572
Total operating revenues		$163,011
Operating Expenses		
Maintenance		$ 25,614
Depreciation		33,557
Traffic		26,308
Commercial		5,421
General office salaries and expenses		12,193
Other operating expenses		5,548
Total operating expenses		$108,641
Net operating revenues		$ 54,370
Less—operating taxes		9,400
Net operating income		$ 44,970
Add—other income		6,663
Dividends, interest and other miscellaneous non-operating revenues.		
Income available for fixed charges		$ 51,633
Fixed charges		22,800
Interest charges on bonds and other debt obligations, including portion ($791.18) of bond discount and expense applicable to current year, and tax on exempt bond interest.		
Balance net income		$ 28,833
Unappropriated surplus, January 1, 1934		121,812
		$150,645
Deduct:		
Dividends—		
Cumulative preferred stock	$19,240	
Common stock	9,000	$28,240
Miscellaneous debits to surplus	71	28,311
Unappropriated surplus, December 31, 1934		$122,334

The officers and staff of the company are as follows: Wm. J. Maddox, president; John H. Wright, vice-president; Lloyd C. Wright, secretary; H. M. Dickson, treasurer; J. Edw. Wilson, general auditor; L. E. Whiting, manager.

The balance sheet, which is presented on this page, shows total assets of $1,036,870, including $115,024 invested in real estate, $658,805 in telephone plant and equipment and $52,751 invested in general equipment and supplies. The liabilities include $150,000 in common capital stock outstanding, $274,275 in preferred stock outstanding, a funded debt amounting to $344,000, a depreciation reserve of $87,179, and an unappropriated surplus of $122,334.



THOUSANDS WITNESS formal opening of Queensway, sub-aqueous tunnel nearly three miles long, which welds Liverpool and Birkenhead into one huge industrial and trading center. View to right shows royal car leaving Liverpool for Birkenhead via the new tunnel, subsequent to the inaugural ceremony

Mersey Tunnel Opened

QUEENSWAY (Mersey Tunnel) in Liverpool, England, the formal opening of which was celebrated recently, enjoys the distinction of being the largest sub-aqueous tunnel for vehicular traffic. Nearly three miles in length and 44 feet in width, the through-way of the tunnel accommodates four lanes of traffic and the dock branches two lanes.

The tunnel serves to facilitate intercommunication between the industrial areas of the north of England and the midland, and north Wales and the south. It also welds the city of Liverpool and the borough of Birkenhead on each side of the great commercial waterway into one huge industrial and trading center, second only in Great Britain to the port of London.

The under-river portion of the tunnel is 46.25 feet in external diameter and 44 feet in internal diameter, while the total aggregate length of roadway is 2.87 miles. The roadway between curb measures 36 feet in the through-way and 19 feet in the dock branches.

The effective safeguarding of users against fire, ventilation-failure, and other risks peculiar to traversing so large and lengthy a subway, presented special problems. A comprehensive communication system, combining telephones and fire alarms, and traffic control signals was, therefore, worked out by Sir Basil Mott, engineer to the Mersey Tunnel joint committee, acting on the advice of P. J. Robinson, city electrical engineer of Liverpool.

The manufacture and installation of the equipment was entrusted to Automatic Electric Co. Ltd., Strowger Works, Liverpool.

The tunnel is continuously patrolled from end to end, and the protective scheme provides for telephone communication between a central control room on the river side of the junction of the Liverpool main and branch tunnels, and individual patrol men wherever they may be.

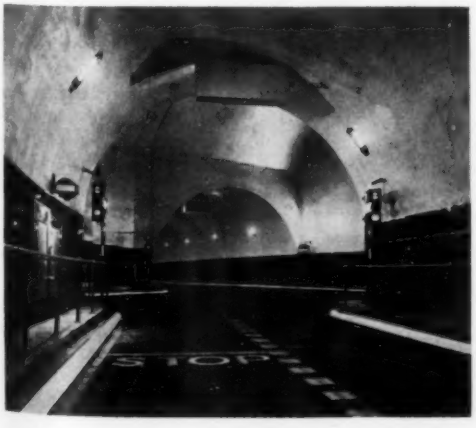
The fire alarm system is similarly linked with the control room and available to patrol men at multiple points which coincide with the telephone stations and a system of hydrants, so that no time may be lost in putting through an automatic fire-call, telephoning essential details or instructions, and taking immediate steps to cope with an outbreak.

Furthermore, since the regular traffic flow would be affected by an outbreak of fire, the fire alarm system is interlinked with illuminated traffic signs installed at every necessary point which are automatically set to "STOP" by the initiation of a fire-call.

For convenience and simplification in dealing with emergencies, the tunnel is divided into six sections, the combined telephone and fire alarm points in each section being grouped together on a circuit terminating on the control room switchboard. Although combined for facility of operation throughout the tunnel, the telephone and fire alarms are entirely independent, and terminate on separate sections of the switchboard.

The combined stations are located at intervals of 50 yards, alternately, on both sides of the tunnel, separate circuits being run along each side, and the circuits for each section are merged on the control room switchboard for telephones and fire alarms respectively.

Each station, of which there are 94 in all, combines in a single gas-tight



Junction Chamber of Main and Branch Tunnels Approaching Liverpool from Birkenhead. Norman Traffic Controlled by Standard Three-Color Light Signals Operated by Electro-matic Road-Detectors and Controllers. Traffic Halted in Emergencies by Neon "Stop" Signs Suspended Above Roadway.

locked metal housing the essential components of a telephone and fire-alarm point. The telephone and fire-alarm apparatus and circuits within the box are independent.

A cast-iron compartment at the top accommodates a hand micro-telephone, induction coil, switch-hook, condenser, pilot lamp relay, and reflector for the call signal lamp, which is planned behind a three-inch projecting bull's-eye lens, rendering it visible from a distance whenever a telephone call is initiated from the control switchboard to the particular section. These visual call signal lamps are energized by current from the supply mains and are connected through an interrupter with the tunnel lighting service.

Telephone calls to the control room are made as in regular common battery practice—by lifting the receiver.

The fire alarm system is on the closed-circuit, self-testing principle, the "break glass, push button" mechanism being in the lower portion of the metal casing. All wiring, both for telephone and fire alarm is clear of the locked door, to which a small message pad is clipped for use by patrolmen. The fire alarm push button is actuated by a secondary button in the door itself, and is suitably guarded against accidental operation. Protection against excess mains current is afforded by two fuses in the upper part of the casing.

In addition to the 94 combined telephones and fire alarms, there are 53 telephones of standard common battery wall and desk pattern, installed at the tunnel entrances, pumping and ventilating stations, offices and workshops, etc. In the air ducts under the roadway 23 mining type telephones are installed for the use of inspection and maintenance staffs, and are fitted with visual call indicators and are also connected to the control room switchboard in groups.

The control room switchboard is of teak and accommodates the telephone, fire alarm, and traffic control equipment, the latter including a small diagram of the tunnel on which are reproduced normal or emergency conditions as may prevail at any instant. The telephone system has a capacity for 50 extensions, and is equipped with 15 cord circuits, the calling and answering arrangements being similar for all telephones irrespective of type, so that any cord circuit can be used for any call.

Receipt of a fire call is indicated by the illumination of a prominent "FIRE" signal and the glowing of a red pilot lamp indicating the section or tunnel junction from which the call originated. In addition, a loud-ringing bell is set in action and continues until the fire alarm cut-off key is operated.

If necessary, the control engineer can immediately notify either or both the Liverpool and Birkenhead fire brigades via private lines to their respective central fire stations.

Immediately below the fire alarm pilot lamps are keys for setting the traffic signs or for resetting them subsequent to the "All Clear" signal following an automatic emergency operation, and beneath these again are supervisory lamps to indicate a disconnection or earth on any associated fire alarm circuit.

Current for operating the telephones and fire alarms is furnished by four sets of small storage batteries, representing independent units in duplicate, for each service. The operating voltages are 24 for telephones and 50 for fire alarm and traffic control services respectively.

Charging of the batteries is effected from the 230 volts single phase supply through the medium of a step-down transformer and Westinghouse rectifier. A battery driven ringing dynamotor supplies alternating current for telephone ringing purposes.

Combined Telephone and Fire Alarm Station, 94 of Which Are Located Adjacent to Hydrants Every 50 Yards of Tunnel. Visual Calling to Patrolmen Provided. "Stop Your Engines" Signs Illuminated in Case of Ventilation Failure.

Telephone, Fire Alarm and Traffic Signals Terminate on Central Control Board, Thus Enabling Operator to Exercise Complete Control and Organize Resources for Dealing With Any Abnormal Condition.

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Telephone Service Between Europe and Japan

Radio-telephone communication between London and Tokyo was opened officially on March 12 by an exchange of greetings between the British Foreign Secretary, Sir John Simon, and the Japanese Foreign Minister, Koki Hirota. Despite occasional "fading," the two officials heard each other clearly.

Considerable pomp and ceremony attended the opening in Berlin, Germany, of the first direct telephone connection between Berlin and Tokyo. The event was treated as a matter of paramount importance by German newspapers, radio and other propaganda organs.

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Toll Conference Hook-up for Lincoln (Neb.) Company

The Lincoln (Neb.) Telephone & Telegraph Co. reports the first use of toll conference service originating in its territory recently when Elmer B. Stephenson, president of the Security Mutual Life Insurance Co. of Nebraska, was given a hookup that enabled him to talk to the company's various agencies located in nine states. No previous hint of what was about to happen was given the men in the field, who supposed they were summoned to an agency conference, only to hear from loudspeakers the voice of their president telling about the financial condition of the company and its plans.

Activities of Commissions and Courts

Status of Alabama Rate Cut Uncertain

Following a hearing before the circuit court in Montgomery, Ala., on March 25, on a temporary injunction granted the Southern Bell Telephone & Telegraph Co.—restraining the Alabama Public Service Commission from enforcing its order of March 4 reducing the company's rates in Alabama—uncertainty was created as to the status of the reduction order when Albert A. Carmichael, attorney general for the state, admitted that the company had not received due notice of the order of the commission.

Attorney General Carmichael stated that, because of the failure of the commission to give due notice of the proposed rate slash, he would not argue the case on its merits. Chairman Hugh White, of the commission, was in favor of continuing the hearing before the circuit court. The rate reduction, amounting to approximately $300,000 annually, was scheduled to become effective April 1.

Following the decision of the Alabama commission on March 4 reducing its rates (TELEPHONY of March 23), the Southern Bell company filed a protest with the commission against the order, requesting that it be set aside or its operation suspended until the company is given a hearing.

It contended that the reduced rates ordered into effect are too low, unreasonable and confiscatory and cannot be made to yield a fair and reasonable return on the fair value of the company's property used or useful in furnishing the service the rates cover.

In its operations during 1934, it is claimed, the Southern Bell earned less than 4 per cent on the reasonable value of its properties used and useful in intrastate telephone business in Alabama —the earnings being approximately 3.75 per cent, and on its exchange properties in the state the company earned approximately 3.3 per cent. The new reduced rates, it is claimed, will yield less than 3 per cent on the reasonable value of the properties, and less than 2 per cent on exchange business.

It appears from the record that the commission issued an order on January 13, 1934, reducing the rates of the Southern Bell company and retaining full jurisdiction for such further proceedings and orders as, in its judgment, might be necessary.

The company claimed, in its application for hearing and setting aside the recent order of March 4, that the latter order—although designated as a supplemental one—is, in fact, a new order setting out an entirely different scale of exchange rates, issued without any notice or hearing. Thus, it is in violation of the law. The company pointed out that it had complied with the commission's request of February 23, 1934, to file certain information and reports in connection with its order of January 13, 1934, but that such does not constitute a hearing as is required by law.

Nevertheless, the state commission denied the Southern Bell company's application for setting aside its order of March 4 reducing rates, and held that the company had not shown sufficient reason for the suspension of its reduction order. It held its March 4 order was supplemental to that of January, 1934. The Southern Bell Telephone & Telegraph Co. then appealed to the state circuit court in Montgomery, Ala., asking for an order temporarily restraining the commission from enforcing the rate reductions ordered effective April 1. Judge Walter B. Jones issued a preliminary injunction against the commission on March 18 and set March 25 for hearing on a permanent injunction.

Governor Graves recently publicly attacked the rate structure of the Southern Bell company in Alabama, expressing his intention to aid in bringing together the rate-making and tax-paying valuations of the company. It was charged that the company based its rates on a $25,000,000 property valuation and paid taxes on $8,000,000.

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Bell in Louisiana Denied Rate Injunction

District Judge W. Carruth Jones, of Baton Rouge, La., issued a decision on March 21 denying the Southern Bell Telephone & Telegraph Co. a temporary injunction to restrain the enforcement of the order of the Louisiana Public Service Commission reducing telephone rates of the company in the state of Louisiana approximately $450,000. The

Cook No. 100 Central Office Protection contains self-soldering heat coils and lightning arresters. When operated it opens the circuit, grounds the outside line and closes an alarm circuit.

It is highly efficient, economical and low in first cost. Your Central Office investment deserves the best protection—COOK protection.

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YEARS of satisfactory service under all conditions of anchor guying have proven the dependability of Eversticks. Their great strength and holding power, plus ease and speed of installation are reasons why they are preferred by construction and maintenance engineers the country over.

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lower rates were scheduled to become effective March 21.

In denying the injunction, Judge Jones expressed regret that he had been compelled to give a decision in three days upon a record that could not be read "in three weeks."

The telephone company announced its intention of appealing to the Louisiana Supreme Court. C. A. Stair, state manager of the company, expressed the company's desire to maintain a staff of skilled workers and to continue to furnish a high standard of service, and to do so necessitates a reasonable schedule of rates.

The commission's order reducing the Southern Bell company's rates was issued on March 2. On March 8 the telephone company secured a preliminary restraining order against the enforcement of the reduction, posting a bond of $75,000 to insure a refund to subscribers in the event that the courts uphold the commission's order. A hearing in the matter was scheduled for March 18.

When the hearing on the company's application for an injunction opened on March 18 before Judge Jones, Senator Huey P. Long, counsel for the commission, refused to enter a stipulation which would allow the judge extended time to read the 10,000-page record submitted to the court. Under the terms of the state injunction act, a decision is required three days after the hearing. When the records contain lengthy and detailed testimony a longer time is usually granted to allow a more careful study of the case.

Judge Jones' request for an extended time to thoroughly study the case, that he might decide fairly to the parties concerned, was refused by Senator Long, who insisted upon observance of the three-day rule.

"If counsel is unwilling to extend the courtesies," said Judge Jones, "I will have to decide the case the best I can. This is the first time I have ever been prevented from making a study of a case before me."

Senator Long complained against the continuance of the preliminary restraining order of March 8, pending the court's decision, but lost the point when company attorneys cited a constitutional provision requiring the order to remain in effect.

Contentions against the commission's order reducing rates, cited by the Southern Bell company's attorneys at the hearing, are summarized as follows:

(1) That the public service commission had improperly deducted a portion of the company's reserve fund from the property valuation.

(2) That the commission had not computed the portion of the company's plant presently unused, because of a decrease in subscribers, in arriving at the commission valuation.

(3) That the commission was inconsistent regarding its depreciation claim—that the commission accepted the company's 4.64 depreciation percentage in making the reserve fund deduction and then denied it in computing the rate base.

(4) That when a utility makes no more than a fair return when times are good, it should not be compelled to lower them when times are bad.

Senator Long filed a petition at the opening of the March 18 hearing, asking the court to assess $20,000 against the telephone company for the commission to use in employing himself as attorney. In his answer he also alleged that the commission order had not taken into consideration all of the revenue figures which the commission should have counted for the company by approximately $1,000,000 a year.

Previous to this request for $20,000, Senator Long, since December 13 when the utility inquiries were started, had secured orders and agreements from four utilities to pay over to the commission a total of $65,000, out of which the commission paid Senator Long and the public utility consultants he had the commission employ.

Of the $65,000, the telephone company put up $30,000, the New Orleans Public Service Co. put up $10,000 to pay for an inquiry which has never been completed, the Baton Rouge Water Works Co. put up $10,000 and the Baton Rouge Electric Co. put up $15,000.

• • •

Florida Company Presents Testimony in Investigation

The Peninsular Telephone Co., of Tampa, Fla., presented additional testimony before the Florida Railroad Commission on March 21 and 22 in the commission's investigation of telephone rates in the state. The hearing was scheduled to be resumed on Wednesday, March 27, to accept testimony of the Southern Bell Telephone & Telegraph Co. operating throughout the state.

C. E. Archer, general auditor of the Peninsular company, stated at the March 21 session that the company's toll business in the St. Petersburg and Tampa Bay area was operating at a loss as a result of the commission's order reducing rates there.

Mr. Archer testified that the number of telephones in the Peninsular system increased from 41,142 at the close of 1933 to 43,550 in 1934. He stated the peak was reached in 1926 when the company served 50,502 subscribers.

At the March 22 session before the commission Carl D. Brorein, vice-president and general manager of the Peninsular company, said it would not pay

the company to lay a cable across Tampa Bay to St. Petersburg in place of the land wire.

Although he testified the Peninsular company's toll calls between Tampa and St. Petersburg had increased from 8,484 for December, 1933, to 14,035 for December, 1934, Mr. Brorein said there had been a decrease in revenue of $1,167.30 for that month last year.

• • •

Bell of Mississippi Is Refused Rate Injunction

Chancellor V. J. Stricker, of Jackson, Miss., on March 22 denied the petition of the Southern Bell Telephone & Telegraph Co. for a temporary injunction to restrain the Mississippi Railroad Commission from putting into force on April 1 its recent order reducing telephone rates 18 per cent or about $344,000 annually.

The railroad commission, after conducting extensive hearings, held that the company was earning an excessive rate, and ordered an 18 per cent reduction in rates for intrastate charges. The telephone company, denying excessive earnings, insisted that the proposed rate reduction was confiscatory.

Chancellor Stricker held that his court could not invalidate an order of the commission merely on petition of the telephone company, and, in his opinion, the reduction order was presumed to be based on facts found at the hearing, and was not to be interfered with by a temporary injunction. The rate order should be attacked, if at all, he thought, after due consideration of the facts to be brought out in a hearing for a permanent injunction.

The chancellor, in dismissing the petition for the temporary injunction, consented to allowing the telephone company to amend its petition setting forth facts adduced by the railroad commission but at the same time said that he would permit the attorney-general's office to answer the amended petition.

"If this is done, and after a reasonable time is given to the state to prepare for the hearing, I shall consider the rate order on its merits," declared Chancellor Stricker.

George B. Butler, general counsel of the telephone company, announced the company's intention of applying to a judge of the Mississippi Supreme Court for the temporary injunction denied by Chancellor Stricker.

• • •

Wisconsin Bell Denied Rehearing on Handsets

The Wisconsin Public Service Commission has automatically denied the Wisconsin Telephone Co. a rehearing on the commission's order reducing handset telephone rates from 25 cents to eight cents a month, effective August 5 the commission announced on March 20.

By not acting on the rehearing application within 20 days after it was filed, the commission automatically denied the application under the law and cleared the road for the company to go to court, if it desires to do so.

Meanwhile smaller telephone companies are complying with a general order of the commission to establish either a straight eight-cent monthly charge for handset telephones, in addition to the regular rate, or to put into effect an additional 25-cent monthly charge to be paid only two years.

If companies adopt the 25-cent two-year charge, they must exempt customers from further payments who in the past four years have paid 25 cents monthly additional for at least 24 months for handset telephone service, the order provides.

• • •

Firm Asks Reprinting of Directory for Omission

A writ of mandamus directing the Southern Bell Telephone & Telegraph Co. to show cause March 25 why it should not reprint and redistribute the current New Orleans, La., telephone directory in order to incorporate the name of O. E. Lewis Co., Inc. 732 Camp street, was signed March 18 by Judge Hugh C. Cage in civil district court.

The firm name was inadvertently omitted from the December directory, according to the bill of complaint drawn by Normann & McMahon and Horald M. Rouchell, attorneys. O. E. Lewis, president of the firm bearing his name, in his petition asks the court for permission to "proceed in damages for any injuries sustained or to be sustained" by the omission of the name.

Asserting that he has been a telephone subscriber for 14 years, Mr. Lewis says his business, refrigeration service and equipment, has suffered and continues to suffer irreparable loss and injury because of "the gross negligence and careless omission."

He alleged that he did not discover the omission until his business began to suffer "at a time when, in the normal course of events, it should have shown an increase."

Officials of the telephone company said that it would cost "many thousands of dollars" to reprint and redistribute the December issue of the directory.

• • •

Commission Rulings and Schedule of Hearings

FEDERAL COMMUNICATIONS COMMISSION, WASHINGTON, D. C.

March 18: Joint application filed with the telephone division by the Chesapeake & Potomac Telephone Co. of Baltimore City and the American Telephone & Telegraph Co. requesting authority for the supplementing of exist-

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ing facilities by reconstructing with cable containing a larger number of conductors than the heretofore existing open wire facilities a communications line extending from Queenstown, Md., to Princess Anne, Md., a distance of approximately 82 miles.

March 22: Telephone division granted application of the Diamond State Telephone Co., the Chesapeake & Potomac Telephone Co. of Baltimore City and the American Telephone & Telegraph Co. filed March 11, 1935, for authority to supplement existing cable facilities between Dover, Del., and Salisbury, Md.

ILLINOIS.

March 26: Hearing in Chicago on complaint of Clarence M. Shapiro against the Illinois Bell Telephone Co. for restoration of telephone service in the city of Chicago.

MISSOURI.

March 18: Application filed by the Citizens Public Service Co. of Missouri to lease to Byron Bridger its telephone exchanges located at Mendon and Sumner, Chariton county. (Case No. 8938).

NEBRASKA.

March 12: Petition filed by patrons of the Kearney County Mutual Telephone Co. to authorize the Campbell Telephone Co. to supply them from its exchange.

March 13: Approval granted application of the Pierce Telephone Co. for authority to reduce from 10 cents to 5 cents non-subscriber calls over subscriber telephones.

March 13: In the matter of the application of the Spalding Telephone Co. for authority to extend until April 1, 1936, its present reduced emergency rate schedule; granted.

March 13: In the matter of the application of the Nebraska Continental Telephone Co. for authority to suspend installation charges from April 1 to April 13; granted.

March 18: Complaint filed by postmistress at Mills alleging that North Mills Telephone Co. threatens to cut off free service.

March 18: Application made by H. E. Klooze, of Farnam, asking directions how to handle delinquent accounts and what his authority is with respect to cutting off service when patrons refuse or neglect to pay.

March 18: In the matter of the application of F. C. Magnuson of Sutherland for authority to charge a rate of 20 cents for station-to-station and 30 cents for person-to-person calls from Sutherland to Diamond Bar Lake resort and 10 cents and 20 cents respectively for similar calls between Southerland and VanMeters' ranch; granted although commission feels these rates are somewhat lower than those usually charged such service.

April 22 and 24: Orders entered March 12 upon the Lincoln Telephone & Telegraph Co., of Lincoln, the Platte Valley Telephone Co., of Scottsbluff, and the Nebraska Continental Telephone Co., of Columbus, to file on or before these dates depreciation rates for the year 1935.

April 25: Citation issued requiring the Northwestern Bell Telephone Co. to show, on or before this date, cause why an order should not be entered fixing a depreciation rate of 3.18 per cent, or such other rate as will be sufficient to keep its investment intact for the year 1935.

NEW YORK.

March 20: The Newport Telephone Co. filed a revision of its rates which offers multi-party service inside the base rate areas of Newport, Middleville, Ohio, and Poland, which are the central office districts served by the company in Herkimer county. In addition to the services now offered which are retained the company will furnish multi-party service within the base rate areas of these districts for $1.25 gross and $1.00 net per month.

Another amendment to the schedule of rates cancels the service-connection charge for main stations until June 15, 1935. This charge is $2 for main station where facilities are not installed and $1 where facilities are already installed.

OHIO.

February 25: Joint application filed by The Home Telephone Co., of Elida, for authority to sell and the Lima Telephone & Telegraph Co., to purchase the former's property.

March 20: Approval given application of Cincinnati & Suburban Bell Telephone Co. for authority to file the following optional tariff establishing measured service where the flat rate rental is now $3.50 per month:

Base rate area, two-party residence service entitling the subscriber to 45 messages per month for $2.50; additional messages 5 cents.

Locality rate area, four-party residence service at the same rate. Extensions for the measured service are to be 60 cents instead of the prevailing 75 cents.

March 20: Approval granted application of the newly-organized Ohio United Telephone Co. which recently secured authority to issue 75 qualifying shares of no-par common stock at $200 per share filed on March 18 for permission to acquire the properties of five Ohio telephone companies:

Camden Telephone Co., Eaton Telephone Co., Eldorado & West Manchester Telephone Co., Hollansburg Home Telephone Co., and the New Paris Telephone Co.

In addition to granting the application, the commission authorized the company to use the proceeds ($1,500) of 75 qualifying shares in the payment of organization expenses.

The new company acquires the property subject to a depreciation reserve of $65,400.97, liabilities of accruals not due of $12,079.50, a surplus of $10,694.87 and reserve for uncollectibles $258.14.

OKLAHOMA.

March 21: Hearing on application (No. 15635) of the Southwestern Bell Telephone Co. for permission to abandon the exchange at Crowder.

WISCONSIN.

March 30: Hearing in Madison regarding the depreciation rates of the Wisconsin Telephone Co.

April 17: Hearing at Madison on the commission's general order to telephone utilities of the state to establish one of two rates for handset telephone service proposed by the commission or show cause for not doing so.

Since the order was issued three weeks ago, two smaller telephone companies of the state have complied with the order, while several other smaller companies have indicated they intend to put the commission's proposed charges into effect.

In its general order the commission asked telephone utilities to adopt an eight-cent monthly additional charge for handset telephones or a 25-cent monthly charge for two years.

Personal Items About Telephone Men

P. M. Ferguson, of Mankato, Minn., manager of the Mankato Citizens' Telephone Co., recently underwent a major operation. Latest reports state that he is recovering nicely.

▲ ▲ ▲

Chester I. Barnard, of Newark, N. J., president of the New Jersey Bell Telephone Co., has been elected president of the Telephone Pioneers of America. He succeeds the late Bayard L. Kilgour, of Cincinnati, Ohio, who was elected president at the annual meeting of the Pioneers last October.

▲ ▲ ▲

Frank F. Fowle, of Frank F. Fowle & Co., electrical and mechanical engineers with headquarters in Chicago, has been nominated for the office of president of the Western Society of Engineers. He is now chairman of the engineering history division and a member of the council of the consulting engineers division.

Mr. Fowle was treasurer of the organization in 1920 and vice-president from 1921 to 1923.

▲ ▲ ▲

R. C. Shellenbargar has been named non-functional manager of the Valparaiso, Neb., exchange of the Lincoln Telephone & Telegraph Co., succeeding **L. Broman,** who was transferred to Table Rock as non-functional manager. Mr. Shellenbargar joined the Lincoln company as a member of the plant department in Lincoln, May 24, 1926. He was transferred from Wahoo to Tecumseh as combination man, May 21, 1934, the position he held when he was named to his new position.

R. C. Shellenbargar, Valparaiso, Neb.

L. Broman, Table Rock, Neb.

Mr. Broman succeeded **Robert Gray** at the Table Rock exchange, the latter being transferred to the plant department at Beatrice. Mr. Broman joined the Lincoln company on April 18, 1927, as a member of the plant department. He was named manager at Valparaiso, March 1, 1934, the position he held when selected for managership at Table Rock.

▲ ▲ ▲

Harlow E. Ward, of Carbondale, Pa., manager for the Bell Telephone Co. of Pennsylvania at the Carbondale, Hawley, Honesdale and Jermyn exchanges since 1920, has been retired on pension after more than 26 years of service in the telephone industry. He has been succeeded by Walter A. Fegley, of Wilkes-Barre.

Mr. Fegley began his telephone career at Reading, Pa., in 1907. He was made wire chief at Lebanon in 1910 and later in the same year returned to Reading, where he remained until 1921, by which time he had risen to the position of district manager. He was transferred to Scranton in the same capacity in 1923, and in March, 1927, was appointed district connecting company supervisor.

Since that promotion Mr. Fegley has continued to represent the Pennsylvania Bell company in its relations with Independent telephone companies in the North-Central section of the state. He has been division connecting company supervisor, with headquarters in Wilkes-Barre, since March 1, 1929.

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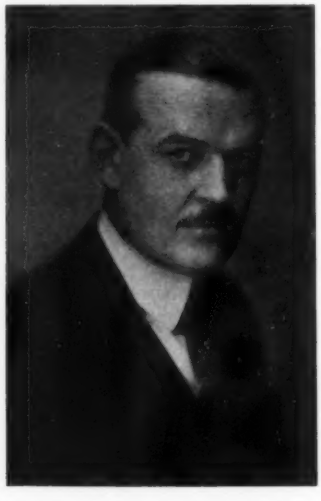
The Manufacturers' Department

Annual Report of Kellogg Company Reflects Upturn

Net sales substantially 40 per cent greater than in 1933 and an improvement in the value of orders received during the first two months of 1935, as compared with a like period last year, are reported by President G. A. Yanochowski of the Kellogg Switchboard & Supply Co., with headquarters in Chicago, in his annual report to the stockholders for the year 1934. Despite these increases, however, the company is operating at less than one-quarter of its capacity.

"Some of the telephone operating companies, customers of your company, who formerly had sizable stocks of telephones in their storerooms due to takeouts, now find that these stocks have been depleted and that they are in the market for new telephone instruments," says Mr. Yanochowski in his report.

G. A. Yanochowski, President of Kellogg Switchboard & Supply Co., Reports Encouraging Sales Increase.



H. E. Billington, General Sales Manager, Has Been with the Kellogg Company for More Than Eight Years.

"This situation is also indicated by a continued increase in volume of telephone orders received in 1934 and in the first two months of this year. Many of the operating telephone companies are making long-needed improvements in their outside plants and are showing considerable interest in the purchase of new central office equipment."

The net income of the Kellogg company for 1934, before making provision for depreciation of plant property and amortization of patents, was $162,147. After making these deductions, it was $59,780. This is the first profit from operations since 1930. The balance sheet shows a substantial increase in working capital and in the ratio of current assets to current liabilities. The current assets as of December 31, 1934, were $3,046,030, and current liabilities, $105,944.

As of March 4, 1935, the market value of the company's bonds on hand December 31, 1934, had increased to the extent that less than $40,000 of the bond reserve was required to cover the difference between the cost and the market value of the bonds. The balance sheet for 1934 shows that the company's assets include $1,069,960 invested in United States government and municipal bonds, which then had a market value of $1,020,719; and $862,512 invested in public utility, railroad and industrial bonds, then having a market value of $828,940.

Mr. Yanochowski states, in the annual report, that during the past few years much time and attention have been devoted by the company to securing outside devices and articles which it could produce to supplement its regular line of manufacture. In general, these efforts have produced some supplemental business which has assisted in carrying the company's fixed burden.

During the past year, through the efforts of its own research and development department, new telephonic and related devices were developed, several of which were placed in production during 1934 and had ready customer acceptance. Other devices developed during the year will be placed in production soon and should be a source of further revenue.

Mr. Yanochowski has been president of the Kellogg company since the early part of 1930, when he was chosen as chief executive to fill the vacancy caused by the death of W. L. Jacoby. Prior to that time he had been affiliated with the company's legal department for 15 years, having complete charge of the legal and patent department from 1925 to 1930.

H. E. Billington, general sales manager, has been with the Kellogg company's sales department since the fall of 1927.

• • •

Bone Conduction Type Receiver Aids Hearing

A bone conduction type of receiver has been added to the hearing aid equipment produced by the Western Electric Co. and designed by Bell Telephone Laboratories. The entire receiver weighs slightly over half an ounce and is 11/16 ins. wide, 1 5/16 ins. long and a maximum of 9/16 ins. deep. The case is made of phenol plastic material.

The receiver, worn just back of the ear against the mastoid process, has been designed to give a large area of contact with the head at that point. The contour of the contact surface is based upon scores of impressions taken from different heads.

The receiver employs an armature fixed to the contact surface and a bipolar magnet of high efficiency. As the magnetic field fluctuates with the flow of current through the microphone, the inertia of the magnet causes the receiver to vibrate and the contact surface transmits the vibrations to the bones of the head. The vibrations are picked up directly by the cochlea of the inner ear, thus by-passing certain organs of hearing through which sound normally enters.

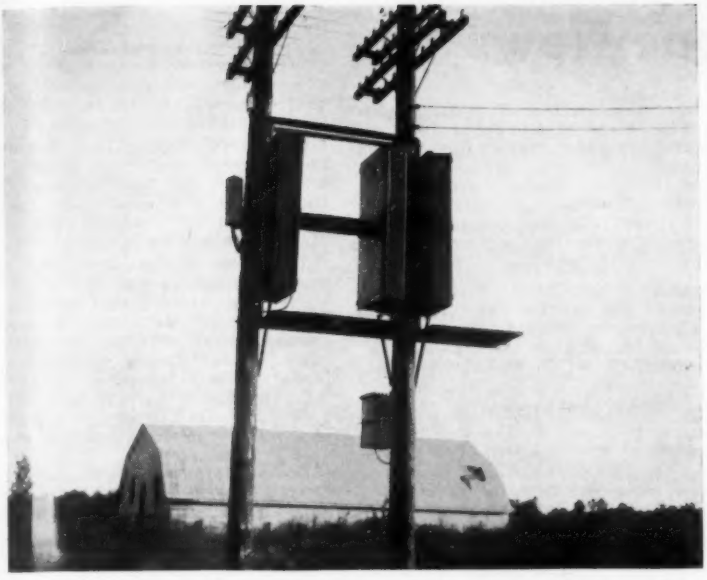
In cases where these organs have been impaired by illness or accident, the bone conduction receiver is of particular assistance. In other instances of impaired hearing, it has the advantage of leaving the ear open to function together with the receiver.

The home conduction receiver transmits virtually the entire audible range of sound. It fits onto a tiny plug at the end of the transmission cord and can be used interchangeably with the air conduction type of receiver.

• • •

Unattended Automatic Exchange on Poles

Three all-metal, waterproof junction boxes, mounted on two poles, make up the "exchange building" for one of the recently installed unattended exchanges



Unattended Autelco All-Relay C-A-X Mounted on Poles in Lewiston, N. C.

of the Carolina Telephone & Telegraph Co., Tarboro, N. C. This equipment was installed at Lewiston, N. C. It consists of a 26-line Autelco all-relay C-A-X, made by Automatic Electric Co., Chicago, particularly for this installation.

The three boxes contain the line and trunk equipment, the interconnecting links, and the power apparatus (including a full-wave rectifier), respectively. They are mounted, together with the cable terminal and the electric service box, on two 25-foot poles, and are shielded and equipped with suppressors to prevent radio interference. The equipment provides for handling 26 local lines on an individual, two-party full-selective, or 10- or 20-party code-ringing basis.

This exchange is one of 36 C-A-X's in the network of the Carolina Telephone & Telegraph Co. It has two toll trunks to the control exchange at Rich Square, N. C., from which point also are controlled three other C-A-X's. The operation of the Lewiston exchange is periodically checked from this point. It has now been in service for about six months, and its operation has not been in the least affected by its exposed location.

• • •

Western Electric Report Shows Improvement

An increase of 32 per cent in the total volume of sales, as compared with 1933 operations is shown in the annual report of the Western Electric Co. for 1934. This is the first time in five years that an improvement in business has been recorded over the preceding year.

In spite of this improvement, the company reports a net loss of $7,751,548 for 1934, as compared with a loss of $13,772,504 for the preceding year. Operations were less than 20 per cent of capacity. At the close of 1934 the company's employes totaled 20,416 as compared with 18,446 at the end of 1933.

Sales by the Western Electric Co. to Bell System companies during 1934 totaled $84,698,000. Sales to other companies amounted to $7,109,000, bringing the year's total up to $91,807,000. This figure compares with total sales of $239,531,000 in 1925; $263,105,000 in 1926; $253,724,000 in 1927; $287,931,000 in 1928; $410,950,000 in 1929; $361,478,000 in 1930; $228,956,000 in 1931; $117,850,000 in 1932; $69,511,000 in 1933.

The net loss for the year includes a profit of $849,941 from subsidiary and associated companies. After crediting profits of $2,036,073 on sales of marketable securities and making other surplus adjustments, the balance in the surplus account as of December 31, 1934, was $12,579,222, a decrease of $5,704,382 for the year.

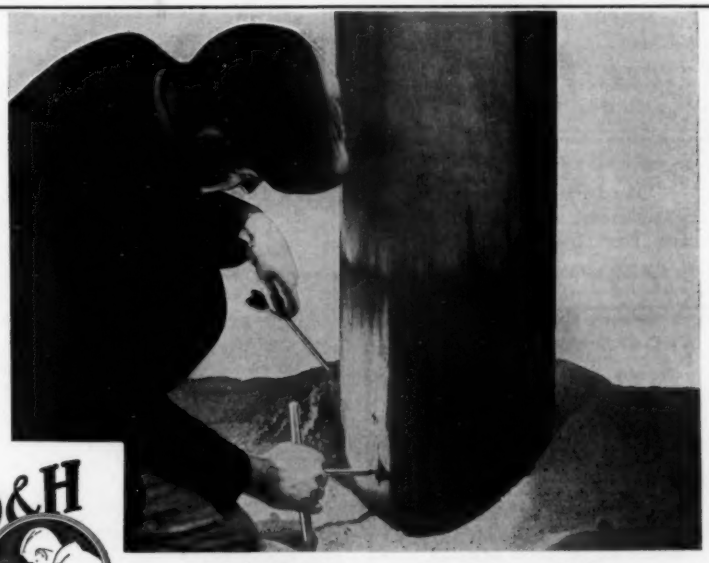
Additions to plant amounted to $1,634,000, while plant retired from service totaled $25,667,000, resulting in a net decrease in plant in 1934 of $23,033,000. The plant written off was charged to the depreciation reserve.

The company's balance sheet as of December 31, 1934, shows total assets of $296,834,739. This includes $138,128,423 invested in plant, $56,893,521 in advances to and investments in subsidiary and associated companies, $24,210,910 invested in United States government securities.

Edgar S. Bloom is president and J. D. Kennedy is general telephone sales manager of the Western Electric Co.

P&H PROCESS Poles

Field Tests Prove their Long Life



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MINNEAPOLIS, MINN.

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Brief Telephone News

Telephone Companies' Annual Reports

COMBER, ONT., CAN.—The Tilbury West Telephone System, with a $12 per year rate, has increased its surplus to $7,000, despite a severe storm in March last year that wrought heavy damage to lines. Note of this fact featured the recent annual meeting together with the announcement that the system will be enabled to operate during 1935 without borrowings. R. F. Benoit presided at the meeting.

W. A. Keith, the secretary, was appointed auditor. Manager J. W. Brown reported fully on the past year's enterprise and development. Commissioners Dr. C. E. Kinster, J. T. Arnew and A. J. Tisdelle were re-elected.

Telephones Gained

DENVER, COLO.—The Mountain States Telephone & Telegraph Co. gained 1,107 new stations in January compared with 415 in the same month last year.

ROCHESTER, IND.—At the end of 1934 the Rochester Telephone Co. had 1,450 telephones, according to its annual report, and each telephone was used an average of 134 times per month for local calls and 2½ times per month for long distance calls. During the year 283 telephones were installed.

PHILADELPHIA, PA.—The Bell Telephone Co. of Pennsylvania reports a net increase of 2,396 telephones in service in February and a gain of 4,458 for the first two months of 1935, comparing with gains of 1,114 and 1,864 respectively in the corresponding periods last year.

The Diamond State Telephone Co. gained 74 stations in February and 189 for two months of 1935, comparing with 63 and 208 respectively a year ago.

Elections

GRANITE FALLS, MINN.—The three directors of the Granite Falls Telephone Co. whose terms expired this year were re-elected for another term, namely, K. E. Neste, C. E. Wilson and Helmer Hanson.

Miscellaneous

GRAND JUNCTION, IOWA.—The Northwestern Bell Telephone Co. has discontinued the furnishing of local telephone service here, relieving the practice of competition. The Junction Mutual Telephone Co. will continue to furnish local service and has entered into an agreement with the Northwestern Bell company for long distance connections.

PROVIDENCE, R. I.—The New England Telephone & Telegraph Co. has issued an order barring race wire services from the use of company wires. The company's action was taken at the request of Attorney General ohn P. Hartigan of Rhode Island, as part of the company's cooperation in a campaign to end illicit gambling in this state.

CHARLOTTE, TENN.—The exchange of the Southern Bell Telephone & Telegraph Co. at Van Leer has been discontinued and the community is being served from the Charlotte exchange. A dial system will be installed.

JONESBORO, TEXAS.—The city council recently voted to accept a proposition of the Southwestern Bell Telephone Co. to pay $1,100 per year as privilege license instead of a tax on number of poles. Under the old arrangement the taxes per pole totaled about $600 per year, with free service furnished the police and firemen and a discount to other city employes amounting to about $410 per year.

Under the new proposal, accepted by the city council, the company will eliminate all free service and pay a total of $1,100 annually, billing the city the same as other subscribers.

The contract is for a five-year period with option of renewal for five years unless either party gives a 60-day notice prior to expiration of the first five-year period.

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Determination of Exchange Costs Incident to the Furnishing of Toll Service.
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Consulting Telephone Engineer
"Modernization of Equipment and Methods for Improved Service"
GARRISON BABCOCK
1104 Third Avenue, Seattle, Washington

COFFEY SYSTEM
Exclusive Telephone Accountants
CERTIFIED
Systems Installed
Audits and Special Services
CENTRAL ACCOUNTING DEPARTMENT
Consolidated Bldg., Indianapolis

ACCOUNTING
HERDRICH AND BOGGS
Certified Public Accountants
Specializing in Telephone Accounting and Rate Cases Since 1918
901-7 Continental Bank Bldg.
Indianapolis, Indiana

"THE MOSTA OF THE BESTA"

By MISS ANNE BARNES

Traveling Chief Operator, Iowa Independent Telephone Association, Des Moines, Iowa

While drinking a cup of delicious, golden brown, percolated coffee this morning I was thinking what a short time ago it seemed when I drank "boiled" coffee and thought it all right. Well, it was not "all right" because that would mean it was "entirely right" and, of course, it was not.

But there was no known better way than boiling coffee except on "company" days when mother settled the coffee through some egg process which I do not recall.

Undoubtedly, there will always be a better and still better way, as time goes on, and we will put each change into our daily program and will not hark back to our already-lived experiences except occasionally, when reminiscing.

We need to be aware of changing conditions and their relation to our line of endeavor. We must draw upon every possible source of information and help. District and state conferences are two sources we telephone people must never purposely neglect.

We know, as never before in our business experience, that our companies are all squarely up against certain problems which must be solved if they are to remain in business. They need, as Ben Bernie, well-known orchestra leader, says, "The mosta of the besta" in every employe in our organizations. In order to find this "mosta of the besta," all employe accomplishment must go through a filtering process. Sometimes, we are disappointed because our efforts do not percolate through to the attention of executives. We may be sure of one thing: our company executives are constantly on the lookout for the "mosta of the besta" that we possess, be it little or much.

Let us ask ourselves these questions every now and then:

(1.) How do I rate as an employe in today's world? Am I up to par?

(2.) Am I searching for fresh knowledge and a deeper and more sympathetic understanding of the problems that my company is confronting?

(3.) Has the filtering process of my company found me on the "Mosta of the Besta" side of its needs? If not, why not?

Buyer's Weekly Guide

A list of firms and companies offering equipment, supplies or services for operating telephone companies

ADDING MACHINES

Burroughs Adding Machine Company, Second Blvd., Detroit, Mich. — Adding, Bookkeeping, Calculating, Billing and Accounting Machines, Electric Carriage Typewriters, Standard Typewriters, Operator Correct-Posture Chairs. Burroughs machines are in use today in hundreds of progressive telephone companies throughout the country.

BATTERIES—DRY CELLS

Bond Electric Corporation, 257 Cornelison Ave., Jersey City, N. J.—Bond Telephone Dry Cells, Bond Flashlights and Batteries, Industrial Flashlights and Batteries, Bond Dry Batteries, Storage Batteries, Voltpruf Special Flashlights for linemen, Victor Telephone Cells and Bond Formula 1216 inhibitor, ideal for keeping the cooling system of trucks and service cars free from rust, scale and corrosion.

National Carbon Company, 30 E. 42nd St., New York.—"Columbia" Telephone Dry Batteries; "Eveready" Flashlights, Flashlight Batteries and Long Life Dry Cells, "National Pyramid" brushes, carbon, graphite and metal graphite for motors, generators and rotary converters. "Eveready" Prestone anti-freeze; "Eveready" Rustone rust preventive; and "Eveready" Air Cell telephone operators' transmitter batteries.

Ray-O-Vac Company, Madison, Wis.—Ray-O-Vac telephone batteries — longer life and better service proven by tests in accordance with U. S. Government standards and records of users. Ray-O-Vac flashlights and industrial flashlight batteries are other items showing Ray-O-Vac's outstanding quality.

BATTERIES—STORAGE

The Electric Storage Battery Company, Allegheny Ave. and 19th St., Philadelphia, Pa.—Exide Storage Batteries. Branches: Boston, New York, Rochester, Philadelphia, Pittsburgh, Washington, Atlanta, Cincinnati, Cleveland, Detroit, Chicago, Kansas City, Minneapolis, St. Louis, Denver, San Francisco and Seattle.

BATTERY CHARGING EQUIPMENT

General Electric Company, Bridgeport, Conn.—Tungar battery chargers. G-E pole line hardware. Cable filling compound.

CABLE—LEAD ENCASED

American Electrical Works, Phillipsdale, R. I.—Paper telephone cable, switchboard cable, bare copper wire. Chicago Office: 20 N. Wacker Drive; Cincinnati: Traction Bldg.; New York: 100 E. 42nd St.

British Insulated Cables, Ltd., Surrey House, Embankment, W. C. 2. Factory: Prescot, Lancashire, England.—Telephone cable of all sizes and capacities.

General Cable Corporation, 420 Lexington Ave., New York, N. Y.—Paper telephone cables of standardized manufacture for over forty years. Weatherproof and insulated copperweld drop wire.

Eugene F. Phillips Electrical Works, Ltd., Montreal, Can.—For any type of wire or cable used in telephone, telegraph or power work get in touch with "Phillips." Manufacturers of bare and insulated copper wires, rubber insulated wires, enameled wire, magnet wire, telephone cables, power cables, switchboard cables, flexible cords, copper rods, etc.

CABLE RINGS

National Telephone Supply Company, 5100 Superior Ave., Cleveland, Ohio.—National Cable Rings, National Splicing Sleeves, Non-Breakable Messenger Cable Hangers, Marlin and Swisher Cable Hangers and Custom Galvanizers. National cable rings are practical because they are two-way,—they allow the cable to be pulled in either direction. National sleeves make secure the weakest points in the line. If it's a splice—make it a National.

CABLE TERMINALS

Cook Electric Company, 2700 Southport Ave., Chicago, Ill.—Protective Pole Cable Terminals, Unprotected Pole Cable Terminals, central office protection, lighting arresters, sleeves, fuses.

Reliable Electric Company, 3145 Carroll Ave., Chicago, Ill.—Complete line of cable terminals, telephone and switchboard protectors, sleeves, fuses, solderless wire connectors and specialties.

CARBON DIAPHRAGMS

Noris Carbon Company, Inc., 150 5th Ave., New York, N. Y.—Carbon diaphragms, carbon back plates, granular and globular carbons, lightning arresters.

CONDUIT

Brazil Hollow Brick & Tile Company, Brazil, Ind.—Makers of Brazil Vitrified Tile. Conduit.

CORDS, CABLE AND WIRE

Lenz Electric Manufacturing Co., 1751 N. Western Ave., Chicago—Established 1904—telephone and switchboard cords for all makes of equipment, braided and lead-covered telephone cable, flame-proof jumper wire, interior telephone wire, switchboard wire.

CORDS AND WIRE

Runzel Cord & Wire Co., 4727-31 Montrose Ave., Chicago—Telephone and Switchboard Cords, Flame-proof Jumper Wire, Switchboard Wire, Interior Telephone Wire. W. L. Runzel, President, has devoted over 40 years to the making of fine telephone cords.

ELAPSED TIME RECORDERS

Calculagraph Company, 50 Church St., New York, N. Y.—Calculagraph is the world's standard elapsed time recorder and gives you toll records printed with elapsed time to the second. Both spring driven and electric motor models are available.

POLES

B. J. Carney & Co., 100 N. 7th St., Minneapolis, Minn.—Western red cedar poles. Pentrex Butt Treated or Plain.

Alfred E. Cowling, Scotstown, Quebec.—Eastern cedar poles, plain or butt treated.

MacGillis & Gibbs Company, Milwaukee, Wis.—Northern White and Western Red Cedar Poles. Plain or butt-treated. Immediate quotations on request.

Michigan Pole & Tie Company, Newberry and Grand Rapids, Mich. — "Poles with Character." Northern White and Western Red Cedar. Strategically located yards, Minneapolis, Minn., and Reed City (Lower Michigan), insure quick deliveries.

Naugle Pole & Tie Co., 5 South Wabash Ave., Chicago, Ill. Northern White and Western Red Cedar Poles. Plain or butt-treated. Let us quote you our new low prices.

H. Sigalet & Company, Ltd., Lumby, B. C., Canada — Western Red Cedar Poles. Plain or Butt treated.

Valentine Clark Corporation, 2516 Doswell Ave., St. Paul, Minn.—Finished Cedar Poles. Plain or Butt treated.

SUPPLIES, SWITCHBOARDS AND INSTRUMENTS

American Automatic Electric Sales Company, 1033 West Van Buren Street, Chicago, Ill.—Public Automatic Telephone Systems, Private Automatic Telephone Systems, Central Battery and Magneto Manual Telephone Switchboards, Remote Control Switchboards, Telephone Instruments of all types, Battery Eliminators, Charging Equipment, Signaling and Control Apparatus, Cords, Wires, Cables, Monotype Copperweld Drop Wire, and a complete line of construction materials and supplies.

Automatic Electric Company, 1033 W. Van Buren St., Chicago, Ill.—Public Automatic Dial Systems, Private Automatic Dial Systems, Telephones, relays, signalling and control equipment.

Automatic Electric Company, Ltd., Milton Road, Edge Lane, Liverpool, England.—Automatic Telephone Equipment.

Automatic Electric Sales Company, Ltd., 1027 W. Van Buren St., Chicago, Ill.—Public Automatic Dial Systems, Private Automatic Dial Systems, Manual Telephone Equipment, telephones, storage batteries, wire, cable, poles, etc.

Kellogg Switchboard & Supply Company, Adams & Aberdeen Sts., Chicago, Ill.—Engineers and designers, manufacturers and suppliers of complete equipment for telephone exchanges and communication systems. Manufacturers of "Master-built" Common Battery, Magneto and PBX Switchboards, "Masterphone" Telephone Instruments, and a complete line of telephone supplies, including bronze drop and interior wire.

North Electric Manufacturing Company, Galion, Ohio—Machine switching telephone systems. Automanual and Automatic. "All-Relay" Switching Apparatus (Dialless and Dial Control). Unattended Satellite Systems.

Siemens Brothers & Company, Ltd., Woolwich, England—Automatic and Manual Telephone Equipment.

Stromberg-Carlson Telephone Manufacturing Company, 100 Carlson Road, Rochester, N. Y. — Telephone apparatus of all kinds, switchboard cords, cable and general telephone supplies.

TOOLS

Crescent Tool Co., Jamestown, N. Y.—CRESTOLOY Pliers, Curved Needle Nose Pliers, Heavy Diagonal Cutting Pliers, Linemen's Side Cutting Pliers, End Cutting Nippers, Crescent Hack Saws.

TRANSMITTER REPAIRS

The Telephone Repair Shop, 1760 Lunt Ave., Chicago, Ill.—Transmitters completely rebuilt and arranged for either magneto or C. B. service. Transmitter fronts and backs refinished in black. Transmitter buttons cleaned and refilled. Receivers repaired; ringer coils and generator armatures rewound.

CLASSIFIED SECTION

Rates 10 cents per word payable in advance. Minimum charge $2.00 for 20 words or less.

RECONSTRUCTED EQUIPMENT

Kellogg No. 15 3-bar bridging hand Generators with brass end bearings complete with Mounting screws & Crank @ $1.85

Western Elec. No. 1533A C. B. Steel hotel sets with W. E. Trans. & Rec. 1400 ohm ringer & Booster Coil @ 7.50

Western Elec. No. 50F Latest type 3-bar Bdg. Generator with crank & mounting screws @ 1.90

Western Elec. No. 143 Receiver with repolished shell & New Cord @ 1.00

New Cook No. 44 Wall type protector rack complete with tubular fuses, Arrester blocks & GG No. 10 cross connecting strip and mounting brackets per 20 line units @ 6.50

Kellogg No. 41 receivers with Kelite shell & New Cords @ 1.25

Western Elec. No. 240 3-bar 1000-1600 or 2500 ohm external post connection desk set signal set with Ind. Coil @ 4.25

No. 19 twisted paid inside telephone wire per 300 foot spool @ 1.75

Kellogg No. 729 S. A. Straight line C. B. Oak finish wood hotel sets with Kellogg No. 22 Trans. & No. 41 Rec. & No. 79 Booster Coil @ 6.75

REBUILT ELECTRIC EQUIPMENT CO. Not Inc.
1940 W. 21st St., Pilsen Station
Chicago, Ill.

HELP WANTED

WANTED—Manager for telephone company operating 6,000 stations. Applicant should have well-rounded experience in management of automatic property and should be, above all, a good wide-awake commercial man. Preference given to man from South or Southwest. Address 8431, care TELEPHONY.

RECONDITIONED

Linemens' test sets

Telecode relays

Pay Stations

Calculagraphs

Ringing machines

●

BUCKEYE TELEPHONE AND SUPPLY CO.
COLUMBUS, OHIO

TRANSMITTERS

REPAIRED AND REBUILT
Guaranteed Quality—Any Quantity
Baked, black, velvet finish, New granular carbon. Workmanship, adjustments and tests made with the latest and most improved apparatus. 50c each less backs.
Full information on request
TELEPHONE REPAIR SHOP
Rogers Park Station Chicago

TEST SET
Lineman's test set with finder coil for locating distance and direction to trouble. Sent on trial.

$31.00

STEWART BROS.
Ottawa, Ill.

TELEPHONE BOOTHS
Refinished practically new, late-type, push-in, folding door telephone booths as low as $16.00 in lots of 6. Single booth prices on request. Also 250 used Linemen's Tool Boxes, 40"x20"x17" deep. $2.00 each; formerly used by W. U. T. Co. Prices F.O.B. Chicago.
W. M. MILLER & SONS
2553 W. Madison St. Chicago, Ill.

FOR SALE

FOR SALE—45,000 Exchange line (Pony) insulators at $25.00 per 1,000 or $21.00 per 1,000 in quantities of 5,000 or more. Prices F.O.B. Lincoln, Nebraska. Lincoln Telephone and Telegraph Company, Lincoln, Nebraska. F. M. Strasser, Supervisor of Supplies.

Reconditioned Equipment

Kellogg 3-conductor Desk Stands only. Late type. Local or Common Batt. $4.50; Kellogg 97 stand, No. 75 steel straight line signal box, $6.75; Kellogg Late Type Ringers, Transmitters, Receivers, $1.00 each. Independent Telo. Repair Co., 1432 W. 15th St., Chicago, Illinois.

FOR SALE—One 200-line North Automatic machine switching switchboard equipped with 146 rotary line switches, 15 connectors, 12 selectors, and a 100 call code calling unit. Address 8424, care of TELEPHONY.

FOR SALE — Combined drops and jacks, Swedish-American, American Electric Burns Express and others at $1.00 each. Electric Specialty Co., Box 645, Cedar Rapids, Ia.

FOR SALE—Motor Generator set direct coupled on base. Century Motor—110 or 220 Volts—60 Cycle 11 and 22 amperes—1750 R.P.M. Holtzer Cabot Generator—50 Volts—20 amperes. Price $50.00 F.O.B. Lima, Ohio. The Lima Telephone & Telegraph Co., Lima, Ohio.

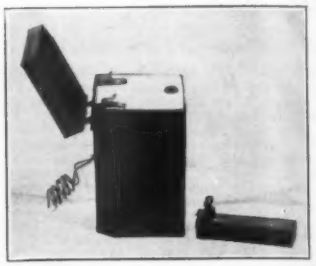
WANTED TO BUY

WANTED—Used 3 and 5 bar magneto wall phones, Kellogg, Western or Stromberg. Can use some Western Electric desk stands. Pioneer Telephone Company, Waconia, Minn.

POSITIONS WANTED

Competent telephone man experienced in all branches, desires position with active company. Will furnish A-1 reference; go anywhere, moderate salary. Address 8434, care TELEPHONY.

Wanted—Position as lineman and trouble man on magneto or c. b. exchange. Several years' experience; will come on trial. Married. Address E. E. Derr, Milledgeville, Illinois, Box 38.



Locate cable trouble with the CANTY FAULT FINDER. This new cable tester operates on two dry cells and locates all cable faults (except opens). There are two binding posts for lead wires to bad cable pairs. Adjustment of tone is simple,—move lock nut up or down. Size 3"x4"x7". No telephone exchange should be without the CANTY FAULT FINDER. Price $12.50 postpaid complete, less head set. Address 8101, care of TELEPHONY.

TELEPHONE AND FIRE INSURANCE RATES

(*Concluded from page* 15)

phone men who have been pushing it as individuals, should in our opinion now be concentrated into an organized effort to put it over.

We suggest that the national association, and each state association, appoint as soon as possible special committees to go to work in earnest and in an organized way on the insurance matter. The committee of the national association could take general charge, keeping the state committees informed as to the manner in which their own activities could be most useful.

The insurance companies are reasonable, and should be greatly interested in plans that should in fact increase their own business. This looks like a real opportunity for a highly-constructive effort that will, if brought to fruition, be useful and valuable to all concerned.